

CHAPTER 6

Wooden Structures

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Introduction

In the years following Clark's excavations at Star Carr, archaeological attention has focused on the large assemblage of osseous material culture and faunal remains that were recorded from the site. However, an equally important feature of the site's archaeology was the platform of birch 'brushwood' that appeared to have been constructed at the edge of the lake in order to serve as an occupation surface (Figure 6.1). The significance of this find is reflected in the detailed manner in which it was described in Clark's first interim excavation report.

"The most interesting feature revealed by methodical excavation of the culture zone was the presence of a rough flooring of birch brushwood (plate ix). Some of the birch stems retained their bark and they were evidently thrown down with their side-branches intact. In certain cases the wood appeared to have been split and in places the upper surface showed signs of charring. As the work proceeded it became evident that ... there was more than one phase of building: a lower level, rich in cultural material and interlaced with bone and antler, dipped with the surface of the gravel; and an upper one, more deliberately constructed of stems thrown across the line of our cutting, running out more or less horizontally ... Although a few timbers had been rammed in obliquely, no certain traces of piles were found. No traces of any superstructure were observed, but the brushwood was covered in places by flattened birch-bark, (Clark 1949, 56).

By 1950, following the second season of excavations, Clark's understanding of the brushwood layers had developed further. To begin with, more thorough excavations of the upper layer showed that it was a natural accumulation of material rather than an archaeological horizon (Clark 1950, 109–10) (Figure 2.3). However, the lower layer continued to be interpreted as an occupation surface based largely on the presence of material culture and in particular the close correlation between the highest densities of worked flint and the extents of the brushwood (Clark 1950, 110–11). From the palaeoenvironmental analysis, Clark argued that the wood had been laid down to stabilise the surface of the swamp in order to allow the inhabitants of the site to camp at the edge of the lake (Clark 1950, 113; Clark 1954, 9). He also recorded stones and wads of clay which he argued

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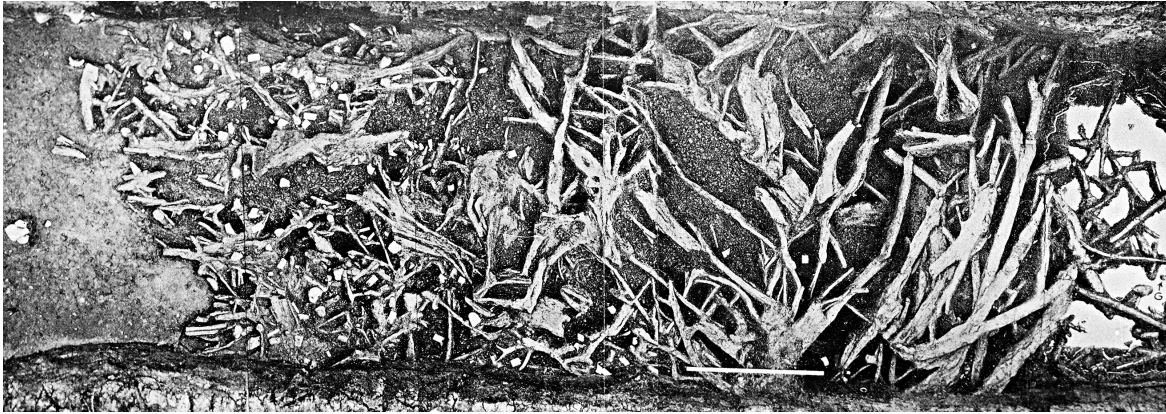


Figure 6.1: Composite photograph of the ‘brushwood’ from Clark’s excavations (Copyright David Lamplough, CC BY-NC 4.0).

had been laid down in order to consolidate the brushwood and two large birch trees that had been deliberately felled (Clark 1950, 113), which he later suggested may have served as a ‘primitive landing stage’ (Figure 2.4) (Clark 1954, 2).

Subsequent reinterpretations of the site have questioned the anthropogenic nature of the platform and have suggested that the material probably represents a natural accumulation of wood that built up at the edge of the lake (e.g. Price 1982). However, Mellars countered this by arguing that the distribution of worked flint recorded by Clark from the brushwood reflects in situ activity areas and, as such, the wood must represent an occupation surface (Mellars and Dark 1998, 221). Reconciling these two arguments, Rowley-Conwy (2010) suggested that as the site was occupied in the summer when lake levels would be seasonally low, the area where the wood was accumulating could have served as a temporary occupation area (Rowley-Conwy 2010, 79–80).

In 1985 a more substantial wooden structure was recorded during the excavation of trench VP85A, some twenty metres from Clark’s trenches (see Chapter 2). This consisted of a series of large timbers laid roughly parallel to each other and running diagonally across the trench (Figure 2.6). Analysis of the timbers showed that they had been split either tangentially, radially or across the grain with several pieces showing additional working traces and tool marks were identified on one piece that probably represented cleaving (Mellars et al. 1998; Taylor 1998). It was posited that the wood had been worked using either flint adzes and axes or elk antler mattocks, whilst aurochs metapodials, red deer tines or roe deer antlers could have served as wedges (Mellars et al. 1998). Samples taken from the timbers and analysed by Jennifer Jones identified the species of wood as aspen (*Populus tremula*) or willow (*Salix* sp.) (Mellars et al. 1998).

The structure was interpreted as a platform, laid to consolidate the wetland deposits or as a trackway to facilitate access to the lake itself, presumably for watercraft (Cloutman and Smith 1988, 52; Mellars et al. 1998, 62). Based on the stratigraphy of the timbers it was suggested that at least two episodes of wood accumulation had taken place (Mellars et al. 1998, 50). Importantly, this structure bore no resemblance to the brushwood platform or the two trees that Clark had encountered, either in terms of shape or the material from which it was composed.

The current project, and in particular the open-area excavation of the lake edge deposits between Clark’s trenches and the area to the east of VP85A, has provided a far more detailed record of the construction and use of wooden structures within the Star Carr wetlands. A total of 4516 pieces of wood were recorded, of which 1602 have been split, trimmed or hewn. Three large timber platforms have been recorded (the central, eastern and western platforms) as well as a more diffuse scatter of wood, which may also have performed a structural function (the detrital wood scatter) (Figure 6.2). A deposit of largely unmodified roundwood (the brushwood area) was also recorded, as was an assemblage of wood from the unexcavated baulk between Clark’s cuttings I and II, and the area to the south of his trenches (Clark’s area). The wood assemblage has been broken down into a series of spatial analytical groupings representing identifiable structures or discrete scatters of material and a group labelled ‘other’ for the material that was recorded outside of the distinct spatial groupings (Figure 6.3).

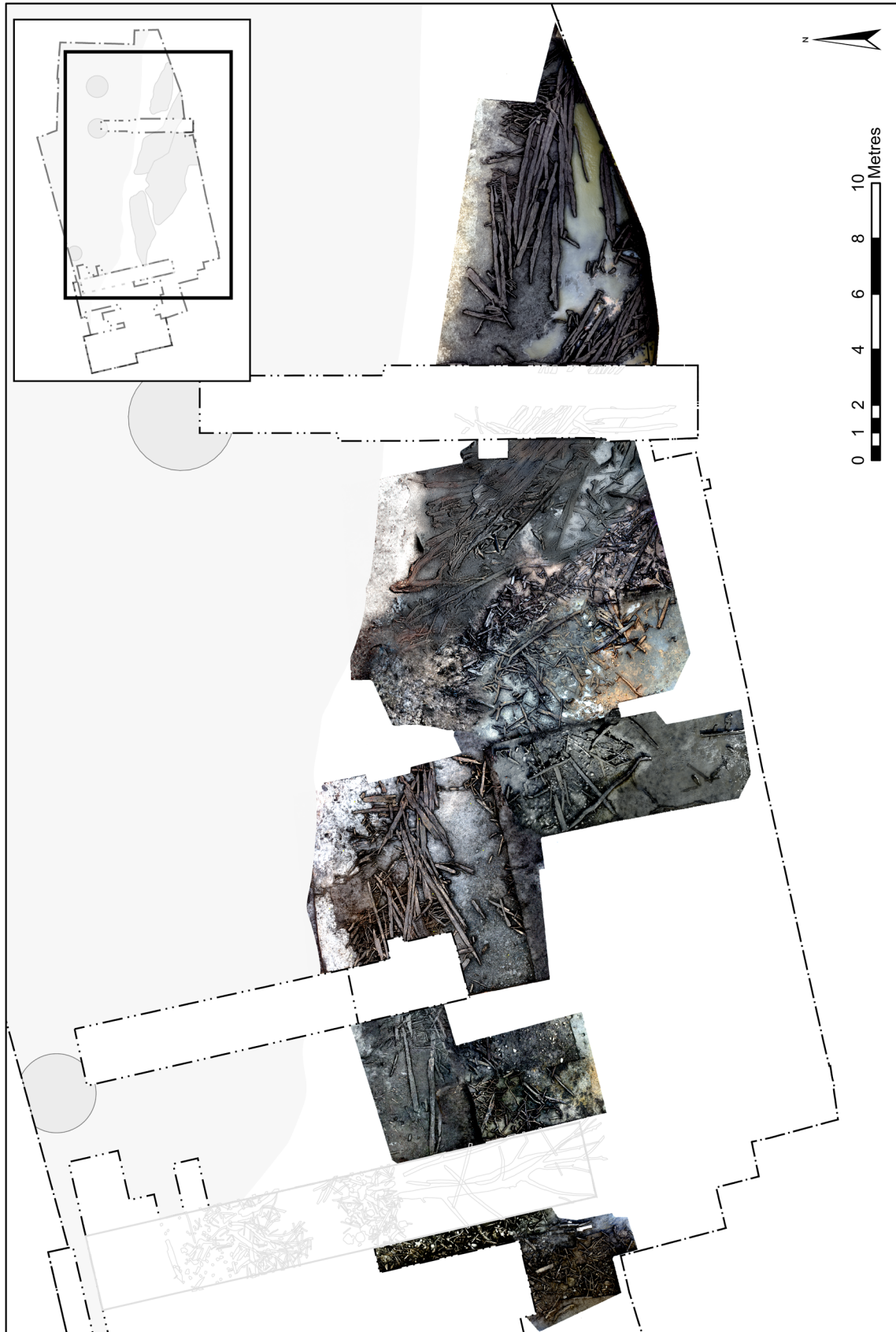


Figure 6.2: Composite orthophoto showing the principal wooden remains on site and what the site would have looked like had it been possible to excavate them all at once (exported from Agisoft Photoscan Pro). However, it should be noted that these wooden structures were not all in use at the same time (see Chapter 9). Each of the models can be viewed in more detail via the ADS (<https://doi.org/10.5284/1041580>) (Copyright Star Carr Project, CC BY-NC 4.0).

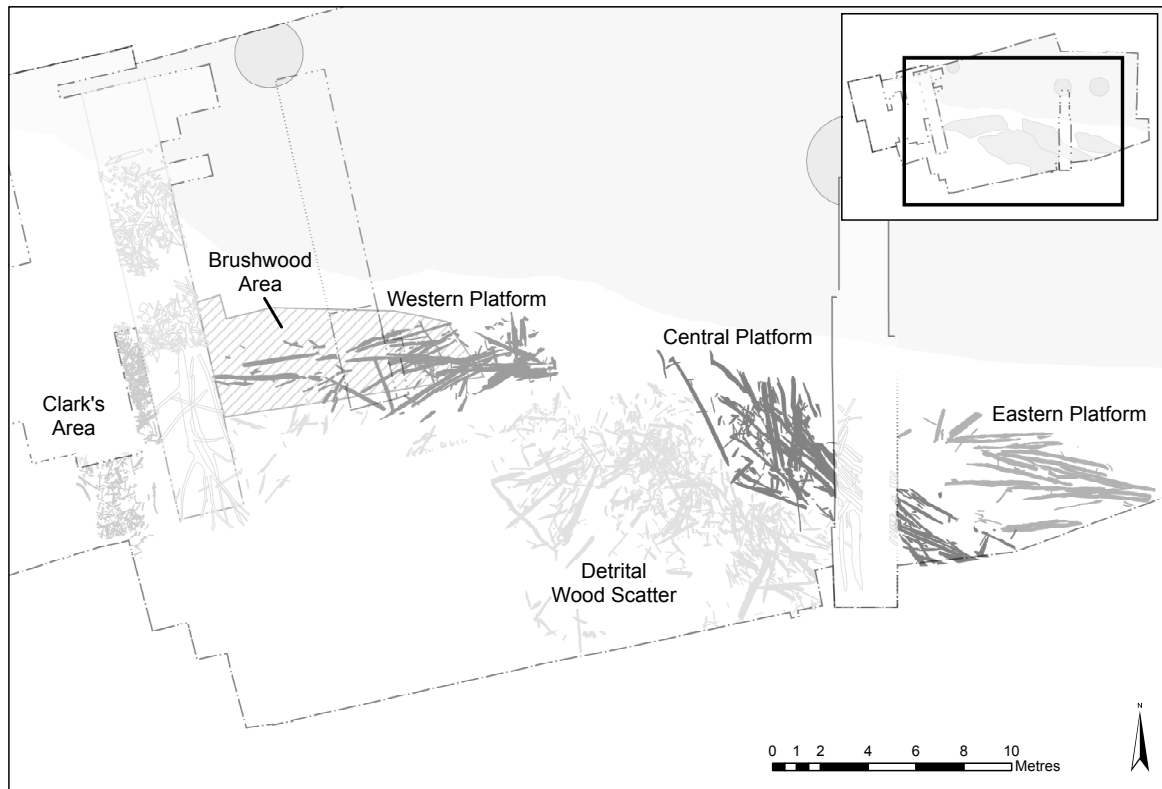


Figure 6.3: Location of the principal wooden remains (Copyright Star Carr Project, CC BY-NC 4.0).

Condition

Unfortunately, the deterioration of the deposits has had a serious effect on the condition of the wood and Chapter 22 presents the methods and further results of the condition survey. Within the assemblage as a whole, a high degree of compression was noted throughout. Overall, the results of the condition survey show that wood is best preserved in Clark's area and the brushwood (Figure 6.4). The borderline for meaningful wood-working analysis sits with material that scores a 3/moderate or above. The material from Clark's area has the highest percentage of material within this bracket (97%), on a par with the material from the brushwood area (95%) and somewhat better than the detrital wood scatter (80%) (Figure 6.4). However, it should also be noted that material in the west of the area of investigation tended to be in somewhat better condition than material towards the east, although the reasons for this are not clear.

The eastern platform appears to have the worst condition scores (30% scores 3/moderate or above) (Figure 6.4). Given the location of the material relatively high in the peat sequence and close to the edge of the lake, it is unsurprising that the majority of the material is in poor condition. In cross section, many of the timbers showed the upper half to be severely degraded with the wood's internal structure almost completely collapsed, whilst the lower half of the timber was in relatively better condition. The degradation of the material has obscured almost all surface evidence, with only a single example of tool faceting noted, and in several cases it was not possible to identify the primary conversion (split) of the material with any degree of confidence.

For the central platform, 52% of the wood scores 3/moderate or above. The material at the top of the upper layer was the least well preserved with condition generally improving with depth. The top timbers had badly degraded upper surfaces, the cross sections were highly compressed and intrusive roots were often visible. In addition, the platform lies on a slight slope which also led to variable preservation, sometimes noted within single timbers: the higher material, closer to the lake edge, had little or no surviving surface data such as tool facets or secondary tooling, limiting detailed analysis of this material (Chapter 22). Overall, 64% of wood from the

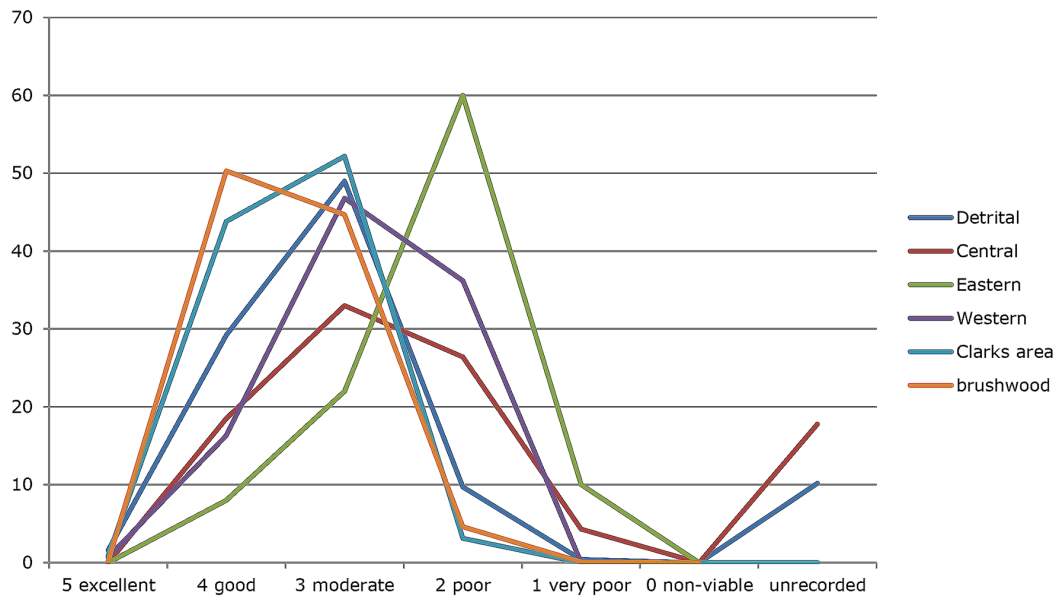


Figure 6.4: Results of the condition survey. The results are calculated as percentages for each area, i.e. in the brushwood 50% of items (1042 out of 2070) scored 4 (good) (Copyright Star Carr Project, CC BY-NC 4.0).

western platform scores 3/moderate or above. Here there are only three examples of tool facets. Again, in many cases, it is not possible to identify the primary conversion (split) of the material with any degree of confidence.

For all three timber platforms, where the end grain was exposed the wood was mottled yellow and black indicating oxidation and the subsequent associated bacterial action spreading through the wood via root holes and radially aligned voids generated by drying. When coupled with the high degree of compression, this material sits on the borderline for meaningful woodworking analysis. Due to the relatively poor condition of the material, it is only possible to achieve a 'broad brush' view of these platforms.

Wood categories

The wood assemblage has been split into six spatial analytical groupings reflecting either coherent structures or spreads of material (Figure 6.3): brushwood area, detrital wood scatter, central platform, eastern platform, western platform and Clark's area. All material that does not fall into one of these spatially-defined groups is assigned as 'other'.

Although every care has been taken when assigning items to a particular analytical group, the detrital wood scatter and the central platform are not clearly defined in plan. Although there is a clear delineation between the detrital wood scatter and the middle and bottom layers of the central platform, there is a possibility that some of the material assigned to the upper layer of the central platform may actually have formed part of the detrital wood scatter and vice versa.

As well as being assigned to a spatial group, each wood item has been categorised according to its macro-morphology. As noted in Chapter 15, the system of categorisation and analysis of wooden items developed by Taylor (1998; 2001) has been adopted for this study. At the heart of this approach lies the subdivision of the assemblage into a series of categories. Although every effort has been made to ensure the categorisation is as objective as possible, it is still a subjective process. The principal analytical categories are:

Artefacts (ART): the categorisation of artefacts is discussed in detail in Chapter 29. This category consists of items that are objects (such as bowls), tools (such as hafts) or items that have been utilised as tools (ad-hoc tools). For the purposes of this study, stakes have also been included.

Timber (TIM): converted or unconverted material derived from trunk or branch wood with a diameter in excess of c. 100 mm, although length may also be considered. This is generally set at a slightly larger diameter (c. 150 mm, Goodburn 1992, 108) but has been reduced down for the purposes of this study as the trees are somewhat smaller in this Postglacial period (aspen, birch and willow) than the trees generally used as timber in later periods in the UK (ash and oak), to which this system is more normally applied. A further sub-division has been applied to timber from the Star Carr assemblage:

- *Trees (TIM – TREE)*: a substantially complete trunk of a tree that may or may not have been cleaned up: ‘topped and lopped’.

Roundwood (RW): small-diameter material in the round derived from understorey growth, small trees (saplings), top and lop from older trees or coppice/pollard derived material. This category includes all the unconverted material smaller than timber (c. 100 mm in diameter).

Root (ROOT): the below-ground, woody element of a tree. As roots are often intrusive, they have been recorded but do not form part of the analytical assemblage.

Debris (DEB): culturally or naturally split material. Debris has several distinct sub-categories that material may be assigned to:

- *Roundwood debris (RWDEB)*: roundwood that has been split by cultural or natural processes.
- *Woodchips (WC)*: the small pieces of wood that are detached by a single blow of a tool, such as an adze or an axe.
- *Timber debris (TIMDEB)*: larger pieces of more complex split/worked woodworking debris or off-cuts derived from the reduction of timber.

The analytical assemblage consists of 4516 items, with material represented from all categories (Table 6.1). There has been some difficulty defining the difference between debris/timber debris and split timber as the material is all very similar in terms of conversion and appearance, with only the metric data varying. This issue has been addressed by considering split debris and timber debris together.

Original diameters have been suggested for split material where a complete radius from pith to bark or bark edge is present. Several abbreviations have been used to describe the features of waterlogged wood and the types of woodworking seen:

	Brushwood	Detrital wood scatter	Central platform	Eastern platform	Western platform	Clark's area	Other	All	All
Wood category	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency	%
artefact	5	8	0	0	2	18	5	38	0.8
bark	83	12	3	0	0	1	4	103	2.3
debris	34	397	44	6	26	126	26	659	14.6
roundwood	1885	424	91	7	43	178	114	2742	60.7
roundwood debris	16	25	3	1	5	46	8	104	2.3
timber	8	225	94	27	55	14	15	438	9.7
timber debris	8	156	37	9	10	8	23	251	5.6
woodchips	31	82	4	0	0	59	5	181	4.0
total	2070	1329	276	50	141	450	200	4516	100.0

Table 6.1: Principal wood categories by analytical area.

- SB - Side Branch
- TR - Trimmed
- SP - Split
- HE - Hewn
- BE - Beaver damaged
- RAD - Radial
- TAN - Tangential

There are several unusual and distinct woodworking traces seen amongst the worked wood assemblage at Star Carr. These include items with lenticular cross sections and chamfered edges, the reason for which is unknown but might perhaps relate to the natural properties of the wood species whilst being cleaved. There is also a propensity for tangential outer splits and splits that fade/feather out at one or both ends. Similarly, there are many parallel sided split items and pieces with traces of longitudinal parallel grooves on split faces, both of which may be indicative of groove-and-split woodworking. Further traces that may be related to this practice consist of timbers which have scars that describe the cleaving away of smaller split pieces. For a full discussion of these see Chapter 28.

Species selection

A total of 180 taxonomic identifications were carried out on the non-artefactual and non-root wood recovered from the 2013–2015 excavations and the various taxonomic identifications have been interpreted as aspen, aspen/willow, willow, birch/alder/hazel and birch (see Chapter 15 for methods).

Amongst the non-artefactual assemblage as a whole, willow is the most frequent taxon identified, with moderate quantities of aspen, willow/aspen and birch and occasional birch/alder/hazel (Figure 6.5). In comparison to other wood categories, there is a strong tendency towards willow within the identified roundwood assemblage (Figure 6.5) with moderate quantities of aspen and birch, as well as occasional birch/alder/hazel

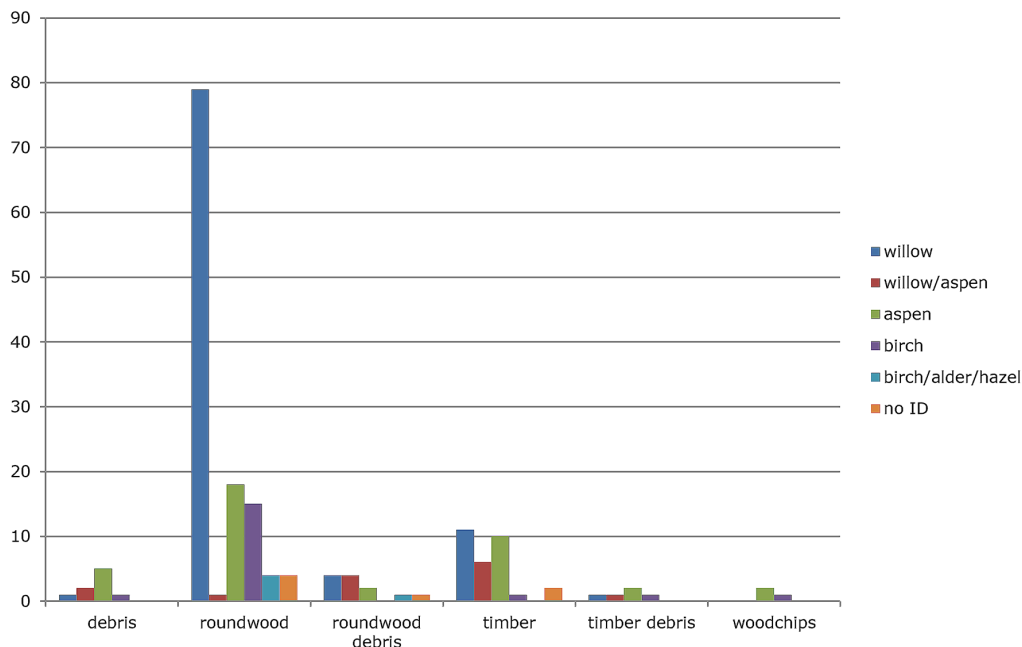


Figure 6.5: Frequency of taxonomic identifications by wood category (2013–2015 excavations only) (Copyright Star Carr Project, CC BY-NC 4.0).

present. Interestingly, if only roundwood with possible morphological evidence of coppicing is considered (see Chapter 28) then the incidence of willow rises to 80%, with birch, birch/alder/hazel and aspen still all present. The higher prevalence of willow is not repeated amongst the roundwood debris. Of the 30 identified items categorised as timber, willow and aspen are prevalent. There is a single item identified as birch (recovered from the detrital wood scatter). The taxonomic identifications carried out as part of the VP85A excavations of the central platform and a subsequent 2010 re-investigation suggested a strong tendency for timbers to be aspen, a finding that has been partially supported during this study (central platform timber identifications: aspen = 3, willow = 2, not identifiable = 2). However, there is a strong prevalence of aspen amongst the timbers of the western platform. These have been identified exclusively as aspen both during the current campaign and the 2007/2010 trial trenching (a total of 20 timbers across the two studies).

In summary, it seems that willow was preferred for roundwood, perhaps due to its propensity to regenerate as coppice stems (see Chapter 28) with aspen and birch also used. In terms of timber, aspen dominates with moderate use of willow and occasional use of birch. It should be noted that throughout Clark's reporting (Clark 1949; 1950; 1954) the wooden remains are identified exclusively as birch in terms of the artefacts (see Chapter 29), the recumbent trees and the birch brushwood platform, although no explanation is given as to how this was achieved. Given the relatively low prevalence of birch or birch/alder/hazel (13%) within the recently identified material, it seems likely that Clark's findings were to some extent based on assumption. This may well be linked to the propensity for the bark of waterlogged wood to turn a silver-grey colour as it dries, appearing to look like birch to the naked eye. However, it should be noted that the birch tree uncovered again in 2007 (Figure 3.9) was examined using techniques described in Chapter 15 and identified as birch by Allan Hall.

Results by Area

Clark's area

Introduction

This assemblage comprises a scatter of material that was recorded during the excavation of the baulk between Clark's cuttings I and II and the deposits immediately to the south of Clark's excavations in 2015 (Figures 6.6 and 6.7). It consists largely of roundwood and debris, though a wide range of other material is also present, including artefacts, woodchips and small quantities of timber. The full extents of the scatter are difficult to discern as it has been truncated on its northern and eastern extents by Clark's trenches and (for the most part) extended outside the limit of the current excavation to the south and west. The only clear indication of spatial patterning is seen in the material from the baulk, which becomes less dense and more diffuse at its southern extent and stops well clear of the edge of the 2015 excavation. From its location, the assemblage very probably represents a continuation of the wood encountered during Clark's excavations. However, there is no indication that this material formed a structural feature or was laid down as 'made ground', and instead it probably represents the deposition of material resulting from woodworking.

Analysis

Overview

The densest part of the assemblage lay within the baulk and was excavated and recorded in its entirety. Significant quantities of wood forming part of the same diffuse scatter were also encountered in the area to the south of Clark's trenches. However, due to time constraints, only a subsample of this material could be recorded (though this included all the worked timber recovered and a subsample of other worked material).

A total of 450 wood records are assigned to Clark's area (Figure 6.8). The majority (396, 88%) were within reed peat (312) with smaller quantities (54, 12%) within the underlying detrital mud (317), several being



Figure 6.6: Clark's area showing the wood excavated by Clark in cutting II (digitised from his plan) and the wood found during the recent excavations (Copyright Star Carr Project, CC BY-NC 4.0).

in contact with the basal gravel (320). Roundwood and debris make up the bulk of the assemblage, though there is a relatively high proportion of artefacts (the most recovered from any of the analytical areas) and woodchips. No material classed as trees was encountered in this area, though two birch trees were recorded during the original excavation of cutting II. There is evidence of charring on 51 items (11%). This occurs on a broad range of wood categories and is spread throughout the deposit (Table 6.2). In addition, two items, both recovered from the reed peat (312) have been gnawed by beavers: roundwood <116085> at one end and roundwood debris <116509> on a single side branch (see also Chapter 28). The preservation in this area is good. However, four items have ancient damage: two have ancient breaks at one end, a single timber seems to have been exposed and degraded prior to becoming waterlogged and one timber appears to have been broken in the ground in antiquity, the two halves becoming slightly dislocated from one another. It is interesting to note that the wooden artefacts recovered from this area also have an unusually high prevalence of ancient damage (see Chapter 29).



Figure 6.7: Composite orthophoto of Clark's area (exported from Agisoft Photoscan Pro) (Copyright Star Carr Project, CC BY-NC 4.0).

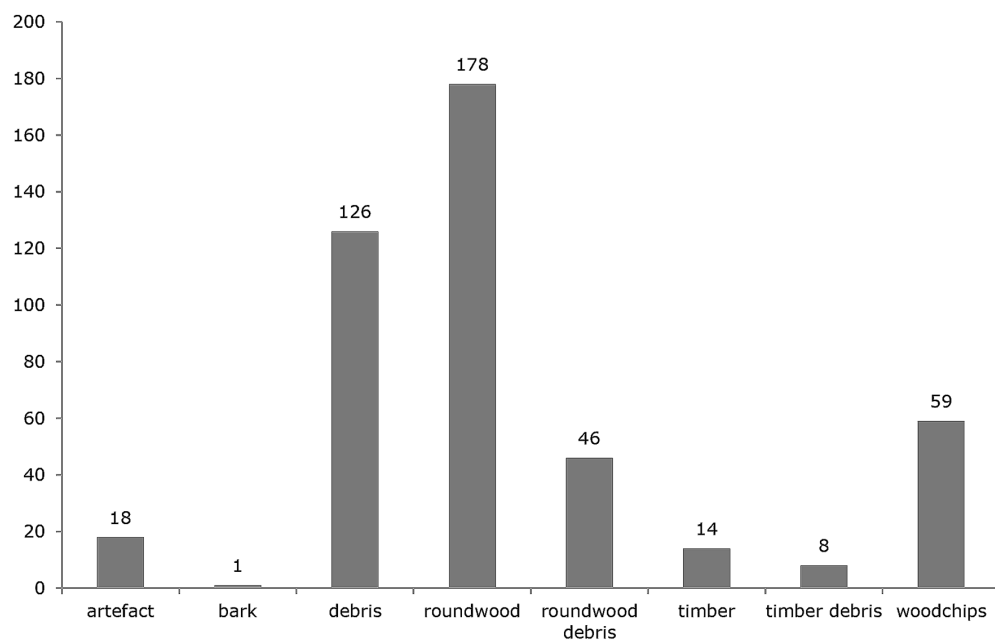


Figure 6.8: Wood categories from Clark's area (Copyright Star Carr Project, CC BY-NC 4.0).

Number	Type	Split	Charred?	Notes
114862	RW	N/A	Heavily	All over
114884	DEB	N/A	Heavily	All over
114895	RWDEB	Tan	Moderate	Outer face
115758	RW	N/A	Charred through	One end
115761	DEB	Tan	Moderate	One face
115762	RW	N/A	Charred through	One end
115773	RWDEB	Rad 1/2	Moderate	Outer face
115815	RW	N/A	Moderate	One face and one end
115817	RW	N/A	Lightly	One end
115818	DEB	N/A	Heavily	One face
115821	RW	N/A	Moderate	One face and one end
115825	DEB	Tan	Heavily	One face
115829	RW	Rad	Lightly	One end
115830	RW	N/A	Heavily	One end
115833	RWDEB	Rad 1/2	Moderate	Outer face
115836	DEB	Tan	Moderate	One edge
115841	RW	N/A	Moderate	One edge
115842	RW	N/A	Moderate	One end
115951	RW	N/A	Lightly	One end
115952	ART	N/A	Lightly	Proximal / worked end
115960	DEB	Tan	Moderate	One face
115961	RW	N/A	Heavily	All over
115962	RW	Tan faced	Lightly	One end
115971	DEB	Rad	Heavily	One end
115981	TIM	N/A	Heavily	One end
116080	TIM	Rad	Moderate	One end / underside
116081	RWDEB	Rad 1/3	Moderate	Outer face
116091	RW	N/A	Lightly	Upper face
116534	RW	N/A	Charred through	One end
116542	RW	N/A	Charred through	One end
116656	RW	N/A	Moderate	All over
116660	RWDEB	Rad 1/2	Lightly	Split face
116663	DEB	Tan outer	Moderate	Inner face
116674	DEB	Tan outer	Moderate	Inner face
116697	RW	N/A	Charred through	One end
116912	RW	N/A	Moderate	One end and one face
116914	RWDEB	Rad 1/2	Moderate	Outer face
116915	DEB	Rad	Lightly	One edge
116917	RWDEB	Rad 1/2	Moderate	One end
116921	DEB	Tan	Heavily	One face and all edges
116932	DEB	Rad	Moderate	One face

Table 6.2: Continued

Number	Type	Split	Charred?	Notes
117153	TIM	Rad 1/2	Charred through	One end
117155	TIM	Tan?	Moderate	Underside
117157	TIM	Rad 1/2	Charred through	One end
117159	RWDEB	Rad 1/2	Heavily	One end
117162	RWDEB	Rad 1/2	Heavily	One face
117163	RW	N/A	Moderate	All over
117167	DEB	Tan	Moderate	One face
117195	DEB	Rad	Moderate	One edge and one face
117197	RW	N/A	Lightly	One end
117225	DEB	Tan	Heavily	All over

Table 6.2: Evidence of charring in Clark's area.

Unsplit material

The unsplit material consists of 180 pieces of roundwood, two of which are stakes, <116654> and <116678>, and a single piece each of bark, debris and timber. Excluding the stakes, the 178 pieces of roundwood are located throughout the area. 46 (26%) have bark present and 78 (44%) show morphological features that may be indicative of coppicing. 21 pieces (12%) are charred. The roundwood varies in length from 45–1715 mm and in horizontal diameter from 10–89 mm. The roundwood in this area is noted as being particularly straight and long, with a high proportion of good-quality poles present. Sixteen items display some kind of woodworking: seven pieces are trimmed, generally at one end or at a side branch from one and occasionally two directions; two of these items are also torn in what has been described as a 'chop and tear' end; a further five items have been torn and one item has been snapped. Three items have been split at one end: two tangentially and one radially. Of these <116675> is noted as having very small, 'choppy' tool facets with a maximum width of 15 mm and length of 16 mm. A single piece of roundwood <116085> has been beaver gnawed at one end. The single unsplit timber <115981> seems to have been exposed and become degraded prior to waterlogging. It has also been heavily charred at one end and measures 320 × 130 × 60 mm. The single piece of bark <115753> is derived from a large timber and measures 180 × 55 × 9 mm and the one piece of debris <114884> has been heavily charred all over and measures 340 × 40 × 25 mm.

Split material

The 251 items of split material consist of 125 pieces of debris, 46 pieces of roundwood debris, 13 timbers, 8 pieces of timber debris and 59 woodchips. The split material classed as timber is spread throughout Clark's area and forms a smaller part of the assemblage than in other analytical areas. The material varies in length from 505–1395 mm, in breadth from 45–230 mm and from 6–100 mm in thickness. A single reconstructable original diameter was calculated as 210 mm. None of the material has bark present and four items are charred.

Some 31% of the timbers are radially cleft (two thin radial splits and two radial half splits) and 69% are tangentially cleft (including four items that are tangential outer splits) (Table 6.3). No tool faceting was seen, and unusual traces are limited to two items where the split fades out at one end and two items where the split fades out at both ends. Timber <117168> had been broken and become dislocated in the ground in antiquity. Two of the timbers stand out as having a somewhat 'structural' appearance, perhaps originally forming parts of small buildings or structures. Timber <117153> is a radial half split that has broken at one end, probably in antiquity, and is charred through at the other end. Measuring 735 × 165 × 100 mm (original diameter 165 mm) this is a very large timber to have snapped. The charring is also unusual, representing a possible 'protection mark' where it may have been in contact with, or perhaps jointed to, another timber (Figure 6.9). Timber <116651> is a thin, radially split plank measuring 755 × 140 × 6 mm (original diameter c. 280 mm) with a particularly neat and regular appearance, suggesting it may have been 'finished' (Figure 6.10).

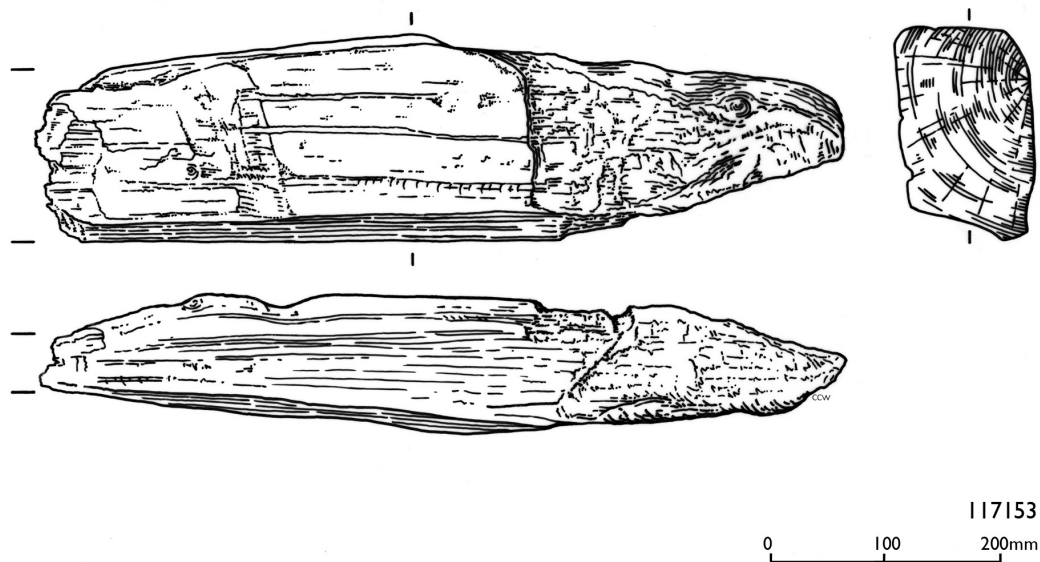


Figure 6.9: Charred timber <117153> (Copyright Chloe Watson, CC BY-NC 4.0).

Conversion	Timber	Timber debris and debris	Woodchips	Roundwood debris	Total frequency	Total %
Rad	2	31	13	1	47	18.7
Rad 1/2	2	1	0	37	40	15.9
Rad 1/3	0	1	0	1	2	0.8
Rad 1/4	0	4	0	2	6	2.4
Tan / Rad / Square	0	2	0	0	2	0.8
Tan	5	63	35	2	105	41.8
Tan outer	4	23	3	3	33	13.1
x-grain	0	1	0	0	1	0.4
Off RW	0	0	6	0	6	2.4
U/K	0	7	2	0	9	3.6
total	13	133	59	46	251	100.0

Table 6.3: Conversions from Clark's area.

The 133 pieces of timber debris and the debris are considered together. This material was spread throughout the area of investigation. No bark was present and 13 items are charred. The material varies in length from 47–670 mm, in breadth from 14–150 mm and in thickness from 5–52 mm. Original diameters could be calculated in nine cases, and these varied from 54–160 mm. Some 28% of the material is radially aligned, including thin radial splits and radial half, quarter and third splits (Table 6.3). A total of 66% of the material is tangentially aligned, including 23 outer splits. Some 7% are of unknown conversion and a single item <117185> is cross-grained. Two items are knots which have been split off, one of which <116521> displays tool facets that describe being trimmed at one end from one direction. Several items show working traces distinct



Figure 6.10: Timber <116651>: potentially finished radial plank (length 755 mm) (Copyright Star Carr Project, CC BY-NC 4.0).

to this assemblage: seven items are parallel sided, one item has a lenticular cross section and one item displays an inner split face that follows the ring structure and also has two chamfered edges.

Of the 59 woodchips that were identified, 22% are radially aligned, 65% are tangentially aligned (including one slab and two tangential outers), 10% are from roundwood and 3% are of unknown conversion (Table 6.3). Only the slab has bark present and a single item is charred. No tool facets were recorded from any of the woodchips. The material varies in length from 32–189 mm, in breadth from 9–81 mm and from 1–12 mm in thickness.

The 46 pieces of roundwood debris are, as might be expected, dominated by radially aligned items (89%). These are frequently half splits but also thin radial splits, radial third and quarter splits. Tangentially aligned items (11%) included three outer splits (Table 6.3). One piece retains its bark, one piece is possibly coppiced while some 20% of the material shows evidence of charring. The length varies from 20–596 mm, the breadth from 14–57 mm and the thickness from 5–33 mm. The 27 reconstructable original diameters vary from 14–60 mm. A single item has been gnawed by a beaver <116509> and a single item has been trimmed to a point at one end <116695>.

Discussion of Clark's area

Overall this assemblage is made up of roundwood and debris, with small quantities of timber and timber debris, but relatively high proportions of woodchips and artefacts (in relation to other parts of the site). The spatial arrangement of the assemblage shows no evidence that it represents a deliberately built platform or trackway, such as pieces laid parallel to one another or arranged to create a solid surface. In addition, only two stakes were recorded in the area and neither appears to have performed a structural function. Nor does

the assemblage appear to have been deposited to create ‘made ground’ or to have functioned as an occupation surface, given its character and the low levels of larger pieces of wood.

Instead the wood recorded from this area appears to have been formed through the deposition of material generated from a wide range of tasks, probably undertaken on the dryland parts of the site, along with a smaller number of wooden artefacts. As the wood is interspersed with a large quantity of cultural material, including artefacts made from antler, flint, and bone, antler working waste and faunal remains (particularly in the baulk), these different materials have probably been deposited together into this discrete area of the lake edge.

Brushwood area

Introduction

This is a large deposit of mostly unworked roundwood, lying close to (and parallel with) the edge of the lake, and extending c. 10.7 m east of Clark’s cutting II (Figures 6.11 and 6.12). Much of the roundwood was crooked and had smaller side stems/branches still attached, giving it the appearance of brushwood or brash. Interspersed amongst it were intrusive roots that radiate out from tree boles along the lakeshore, very low levels of worked wood (woodchips, timber, and debris) and five wooden artefacts (see Chapter 29). The assemblage has accumulated gradually and probably represents a build-up of largely natural material at the edge of the lake. Timbers of the western platform were also contained within this deposit but are discussed separately. Other archaeological material was very sparse in this area, consisting of very small assemblages of animal bone, antler and flint.

The material was first encountered in 2007 during the excavation of SC24, and again in 2010, during the re-excavation and extension of SC24 and Clark’s cutting II. The western extent of the deposit was truncated by cutting II (but clearly extended into that trench), and the central area had been partially excavated during

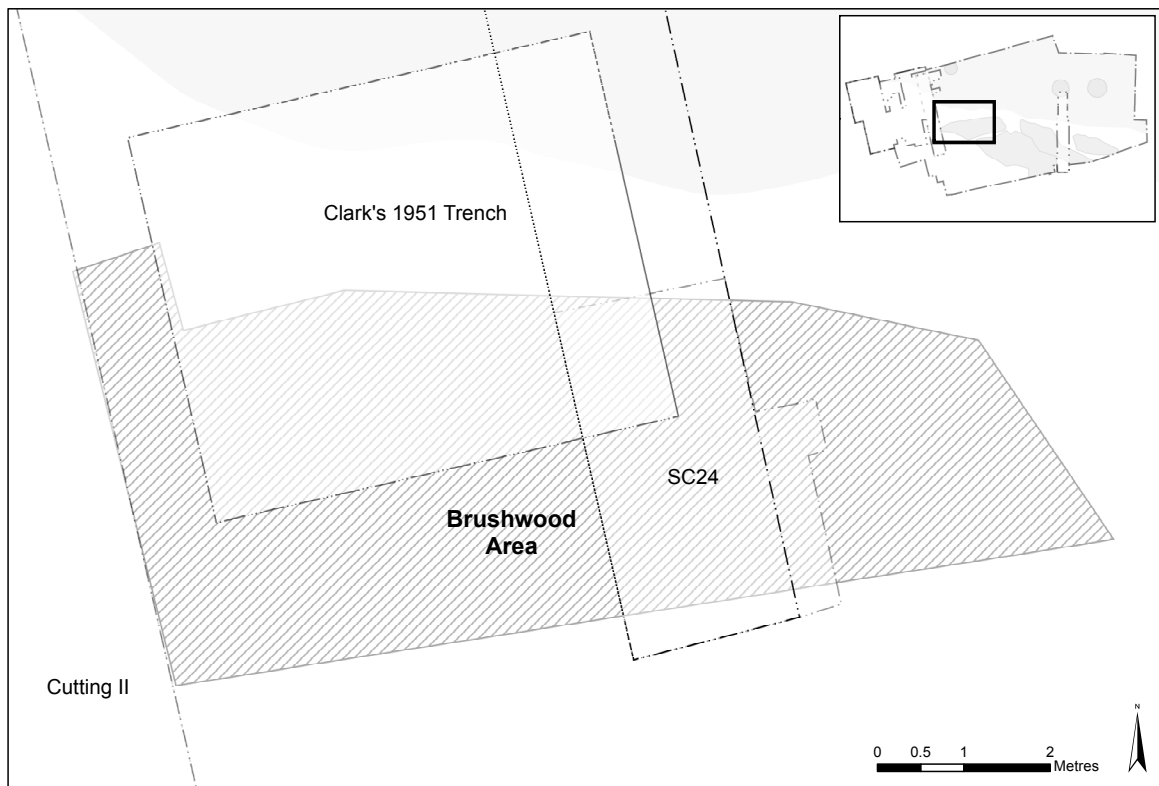


Figure 6.11: Plan showing the extent of the brushwood (shaded) (Copyright Star Carr Project, CC BY-NC 4.0).



Figure 6.12: The brushwood exposed in 2013. The photograph looks to the south-east of the site and the far edge of the brushwood is truncated by the previously excavated trench SC24. The western timbers of the western platform are visible (Copyright Star Carr Project, CC BY-NC 4.0).

Clark's 1951 campaign. Given its proximity to Clark's excavations the deposit was tentatively interpreted as a continuation of the 'brushwood platform' recorded and described by Clark (Conneller et al. 2012). For this reason the area between SC24 and cutting II was exposed and excavated in its entirety in 2013. The deposit was excavated and recorded in nine arbitrary spits, numbered sequentially from the top down. All worked and charred pieces were fully recorded along with a subsample of the unmodified roundwood and a brief record was made of the remaining roundwood (each item being recorded only in terms of diameter, condition and presence/absence of bark).

Analysis

Overview

A total of 2070 wood records are assigned to the brushwood. The overwhelming majority are classed as roundwood, most of it unworked and of small diameter, though low levels of worked material (112 items) are also present (Figure 6.13). The majority of material was found within the detrital mud (317), with just under a third from the reed peat (320) and a small proportion from the basal organic sand (320) (Table 6.4). A total of 41 taxonomic identifications were made on samples taken from this deposit. Of these, willow was the most common species (and the most frequent species of roundwood), though aspen was also well represented and in several cases identification could not distinguish between the two. Birch was represented by a single item (Figure 6.14).

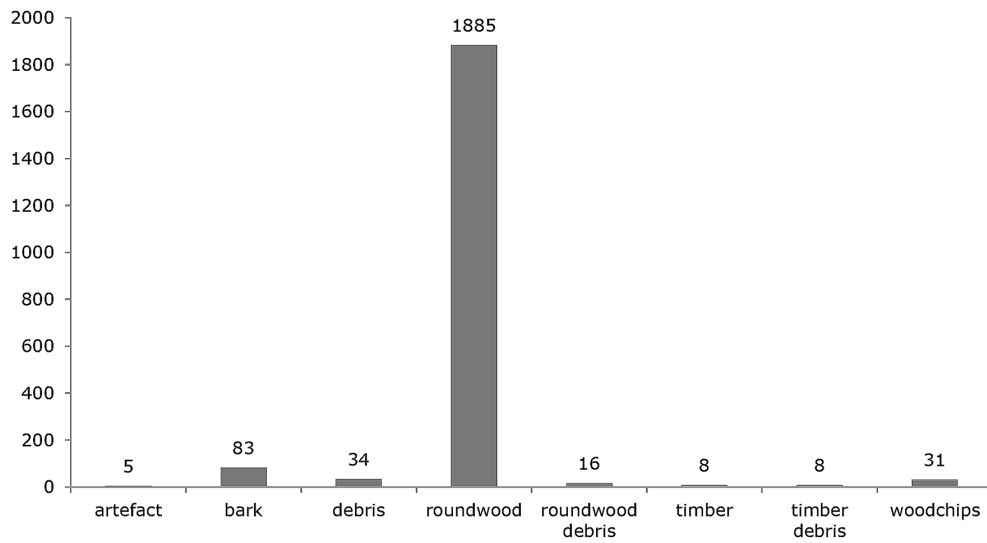


Figure 6.13: Wood categories from the brushwood (Copyright Star Carr Project, CC BY-NC 4.0).

Context	Description	Frequency	% of assemblage
312	reed peat	617	29.8
317	detrital mud	1414	68.3
320	organic sand	39	1.9
total		2070	100.0

Table 6.4: Material from the brushwood by context.

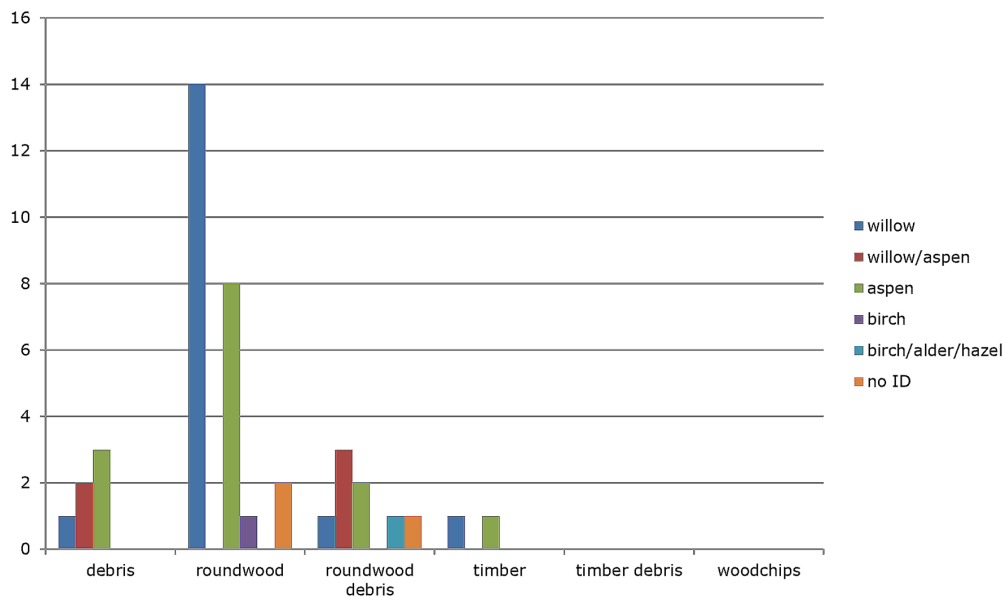


Figure 6.14: Frequency of taxonomic identifications from the brushwood by wood category (Copyright Star Carr Project, CC BY-NC 4.0).

A total of 22 items, representing 1% of the material recorded from the brushwood, show evidence of charring, with a tendency towards heavily charred material. A broad range of wood categories are represented and the charred material is spread throughout the deposit (Table 6.5). Six pieces of roundwood display evidence of beaver modification (Table 6.6). This generally takes the form of gnawed ends and side branches, though one item shows evidence of bark removal and another has been gnawed along an edge. It is of note that <99927> has

Number	Type	Split	Charred?	Notes
93556	RW	N/A	Lightly	c. 1 mm on underside of proximal / N end
94006	RW	N/A	Heavily	All over
94009	RW	N/A	Heavily	One end
94010	RW	N/A	Heavily	All over, both ends charred through
94011	DEB	Rad?	Heavily	All over
94015	WC	tan	Heavily	On one end and underside
94020	DEB	N/A	Heavily	All over, tan aligned amorphous lump
94022	DEB	N/A	Heavily	All over, charred into amorphous lump
94024	RW	N/A	Moderately	One end, 4 mm deep
94045	RW	N/A	Moderately	Underside
94047	TIM	Tan outer	Heavily	To at least 10 mm depth over whole of upper / split face
98001	RW	N/A	Moderately	One end of one face
98041	DEB	Rad	Heavily	One face
98042	ART	Tan	Heavily	One face
98043	DEB	Tan	Heavily	One face and one end
98768	RW	N/A	Heavily	All over
98773	RW	N/A	Heavily	One end
98775	RW	N/A	Lightly	All over
99227	RWDEB	Rad 1/4 (mod)	Moderately	Outer face charred away
99912	WC	Rad	Lightly	One edge
99917	RW	N/A	Lightly	One face
99927	RW	N/A	Lightly	One end. Probably charred post beaver gnawing

Table 6.5: Evidence of charring in the brushwood (tan = tangentially converted, rad = radially converted).

Number	Context	Spit	Type	Notes
98036	312	2	RW	1 side branch (D: 10 × 12 mm) beaver gnawed
99220	320	8	RW	1 end / beaver gnawed
99921	317	8	RW	Proximal end beaver gnawed
99927	317	8	RW	Both ends beaver gnawed. One edge gnawed. One end lightly charred, probably post beaver gnawing
99992	317	8	RW	Distal end and two side branches gnawed by beaver. Gnaw marks on shaft from bark removal
103190	317	8	RW	Proximal end and one side branch beaver gnawed. Distal end is a stepped chop and tear

Table 6.6: Evidence of beaver modification in the brushwood.

been charred, probably after it was beaver gnawed and <103190> has been trimmed and torn at one end and beaver gnawed at the other. Although one item is from relatively high in the sequence (spit 2) the remainder were recovered from near the base of the deposit (spit 8).

Trees

A single timber from this area has been classed as a tree trunk: <98005>. This item was truncated by the excavation of cutting II, with the remaining portion measuring 2420 mm long with a horizontal diameter of 135 mm. No bark was present and there is no evidence of woodworking.

Unsplit items

There are a total of 1971 unsplit items that are not classed as trees, consisting of 1885 pieces of roundwood, one timber, two pieces of debris and 83 pieces of bark (Figure 6.13). Of the 1885 pieces of roundwood, 166 were recorded with a full wood record and a further 1719 via rapid recording. The material was distributed throughout the deposit forming a dense layer of intermingled material. The vast majority of the roundwood had a 'brushwood'/'brash' appearance, being of small diameter and often crooked stem with frequent side stems. However, there were some straighter lengths and 14 items (<1%) showed morphological features suggestive of coppicing (see Chapter 28). Bark is present on 963 items (51%), which is somewhat higher than that noted from the debris scatter (38%) and the three platforms (central 24%, eastern 14% and western 0%) raising the possibility that the material in this area has shed its bark to a lesser extent than the roundwood recorded in other areas. The roundwood varies in length from 103–2175 mm and in horizontal diameter from 1–95 mm. Eight items have been trimmed at one or two ends, six of which have also been snapped or torn with an appearance often described on site as chop and tear. One of the trimmed items <103190> has also been beaver gnawed. Five other pieces have been modified by beavers (Table 6.6), one has been snapped and twelve have been charred (Table 6.5).

The single timber has been truncated at one end by cutting II. The remainder of the timber measures 1200 mm long with a horizontal diameter of 150 mm and no bark is present. The two pieces of debris are both heavily charred into amorphous lumps (Table 6.5).

Eighty-three pieces of bark were recorded. Whilst none shows any evidence of woodworking, the majority of the bark is derived from timber and some pieces are quite substantial (the largest measuring 270 × 25 × 5 mm). As timber represents such a small percentage of the assemblage recovered from this area, the bark cannot all have become detached from timbers present in the brushwood. Although much of the material may be naturally occurring it seems plausible that the bigger pieces may represent discards from an unknown bark-related process taking place in the vicinity.

Split material

There are 93 split items, consisting of six split timbers, eight pieces of timber debris, 32 pieces of debris, 31 woodchips and 16 pieces of roundwood debris (Table 6.7). The six split timbers were present in the reed peat (312) (four items) and detrital mud (317) (two items), and vary in length from 500–1075 mm, in breadth from 86–260 mm and from 5–62 mm in thickness. The material is generally straight grained and knot free with a single side branch noted on one timber. Bark is present on the underside only of the same piece and is noted as being thick (6 mm). All six items are tangentially aligned, two of which are outer splits. Evidence for tooling is limited with light faceting indicative of hewing present on the faces of two items. Three items (50%) show traces of grooves on one face, potentially indicative of groove-and-split (see Chapter 28). The upper face of <94047> is heavily charred to a depth of around 10 mm (Table 6.5). Although the split material is spread throughout the brushwood, there is a concentration of material within spits 7 and 8, suggesting that some of this material probably relates to the western platform (see below). However, it is not possible to determine this association with any confidence.

The eight pieces of timber debris and 32 pieces of debris are considered here together (totalling 40 items) (Table 6.7). These were recovered from all three contexts. The material varies in length from 60–498 mm, in breadth from 14–125 mm and from 1–30 mm in thickness. A single original diameter was reconstructable as

Conversion	Timber	Timber debris and debris	Woodchips	Roundwood debris	Total frequency	Total %
Rad	0	13	6	2	21	22.6
Rad 1/2	0	0	0	8	8	8.6
Rad 1/3	0	0	0	2	2	2.2
Rad 1/4	0	0	0	1	1	1.1
Tan / Rad / Square	0	0	0	0	0	0.0
Tan	4	21	19	1	45	48.4
Tan – surface split away	0	0	0	0	0	0.0
Tan outer	2	5	1	2	10	10.8
x-grain	0	1	0	0	1	1.1
Off RW	0	0	2	0	2	2.2
U/K	0	0	3	0	3	3.2
Total	6	40	31	16	93	100.0

Table 6.7: Frequency of conversions from the brushwood.

40 mm. Bark is present on two items (2.5%). Twenty-six items are tangentially aligned (32.5%), five of which are outer splits. Thirteen items are radially aligned (14.25%) and a single item is cross-grained (Table 6.7). No tool facets were noted, but possible traces of groove-and-split working were noted on 17 items, 16 of which are parallel sided and one with parallel grooves on one face. Three items are heavily charred (Table 6.5).

The 31 woodchips were also recovered from all three contexts. They vary in length from 32–193 mm, in breadth from 16–62 mm and from 3–23 mm in thickness. Again, the material is dominated by tangentially aligned material with 20 items (64.5%) aligned in this plane, one of which is a tangential outer. Six of the chips are radially aligned, two are off roundwood and three are of unknown conversion (Table 6.7). One chip has possible faint tool facets at one end and two items are charred (Table 6.5).

A total of 16 pieces of roundwood debris were recovered from the reed peat (312) and detrital mud (317). Two pieces have bark present and the material varies in length from 76–509 mm, in breadth from 16–62 mm and from 7–40 mm in thickness. Reconstructable diameters (obtained from nine items) range from 18–62 mm. As might be expected from material formed of converted roundwood, radial conversions predominate with 13 items (81.25%) in this plane and three items tangentially aligned (Table 6.7). One piece has possibly been trimmed at one end and one item has been moderately charred (Table 6.5).

Discussion of the brushwood

When observed on site, the assemblage of material encountered in this area appeared to be very similar to Clark's descriptions of the brushwood platform recorded during the 1949–51 excavation. Although the subsequent excavation of the baulk between cuttings I and II in 2015 recorded a very different wood assemblage (described above), the 2013 brushwood area clearly extended into the area investigated by Clark, and could represent at least part of the material that he interpreted as the brushwood platform or the upper, natural layer of wood.

However, it is very unlikely that this assemblage represents a deliberately constructed platform or that it served as an occupation surface. The material occurs throughout the detrital mud (317) and overlying reed peat (312), suggesting that it accumulated gradually, and over a considerable period of time. This is supported by the dating of material from the assemblage itself and the chronology that has been established for the environmental sequence (see Chapters 9 and 17). The much higher proportion of roundwood that still retained its bark is also very different to the roundwood associated with the more obviously anthropogenic structures, such as the three platforms and the detrital wood scatter (though this in itself does not preclude the possibility that the material was deliberately deposited).

Instead, given the long duration of deposition and the broadly homogenous nature of the assemblage, most of which is unmodified, it seems likely that the majority of the material represents the gradual build-up of small-diameter roundwood that probably derived from trees growing at the lake edge. Whilst much of the deposit may have been generated through natural processes (small branches falling from trees), anthropogenic processes may also have been involved given the presence of chop and tear on several pieces of roundwood. This may have included the deliberate clearance of fresh growth in order to improve access through the trees or the maintenance and harvesting of coppice (Chapter 28). Furthermore, the presence of charred and culturally modified material, including wooden artefacts, probably also reflects woodworking tasks that were being undertaken along the lake edge.

Detrital wood scatter

Introduction

The detrital wood scatter consists of 1329 individual pieces of wood, including roundwood, split and unsplit timbers, and (more occasionally) entire trees, that form a large, roughly linear arrangement 25.8 m long (north-west/south-east) and up to 8.5 m wide (south-west/north-east) (Figures 6.15 and 6.16). It runs at an angle from the lake shore, through the wetland area and continues beyond the southern extent of the trench. The arrangement of the wood lacks any appreciable form or recognisable phases of deposition or accumulation and resembles a disorganised jumble of material (Figure 6.15). However, in terms of its overall shape there is a clear opening or gap amongst the wood on the south-west side of the scatter that coincides with a large concentration of animal bone, representing the limbs and parts of the bodies of at least two red deer and several osseous artefacts (including two antler frontlets) (Chapter 7). This, and the broadly linear form of the scatter, suggest that the wood was deposited to stabilise the soft basal sediments and allow movement from the shore into areas of deeper water, possibly (though not necessarily exclusively) for the purposes of depositing animal remains.

The scatter was unknown until the current programme of fieldwork (though it clearly extended into trench VP85A). It was first observed in 2010 when the excavation of trench SC33 encountered several large, split timbers. However, at this stage it was assumed that the wood represented a continuation of the platform that had been observed in VP85A. In 2013, a large part of the scatter was exposed during the excavation of the area to the west of VP85A. The remainder of the scatter was excavated and recorded during the 2014 and 2015 seasons.

Analysis

Overview

A total of 1329 wood records are assigned to the detrital wood scatter, 127 of which are roundwood recorded in plan only, making this the single largest assemblage of fully recorded material from the site. The scatter is also amongst the stratigraphically earliest assemblages on the site with 36% recorded from the basal sandy gravels (319) and organic sand (320) and 46% from the overlying detrital mud (317) and a much smaller proportion recovered from the reed peat (312) (Table 6.9). There was a tendency for the basal timbers, particularly in the eastern half of the scatter, to be in direct contact with the 'hard' geology below the lake deposits, suggesting that deposition began at a very early stage in the sedimentary sequence.

The most prevalent single category of material is roundwood, forming 32% of the total scatter, with only slightly smaller quantities of debris (Figure 6.17). Timber forms a relatively high proportion of the overall assemblage with 225 items (17%), 20 of which are classed as trees; interestingly, there is a particularly low prevalence (only five items) of unsplit timbers that are not classed as trees. Woodchips and timber debris are also relatively common and if one considers the woodworking waste together (roundwood debris, timber debris, debris and woodchips) it forms half of the entire assemblage. Eight wooden artefacts were also recovered (Chapter 29), including stake <107784>, found embedded vertically in the sediments at the south-west edge of the scatter. A total of 98 taxonomic identifications have been carried out from this area, though as has been noted elsewhere, the only trend is for willow to dominate the roundwood assemblage (Figure 6.18).

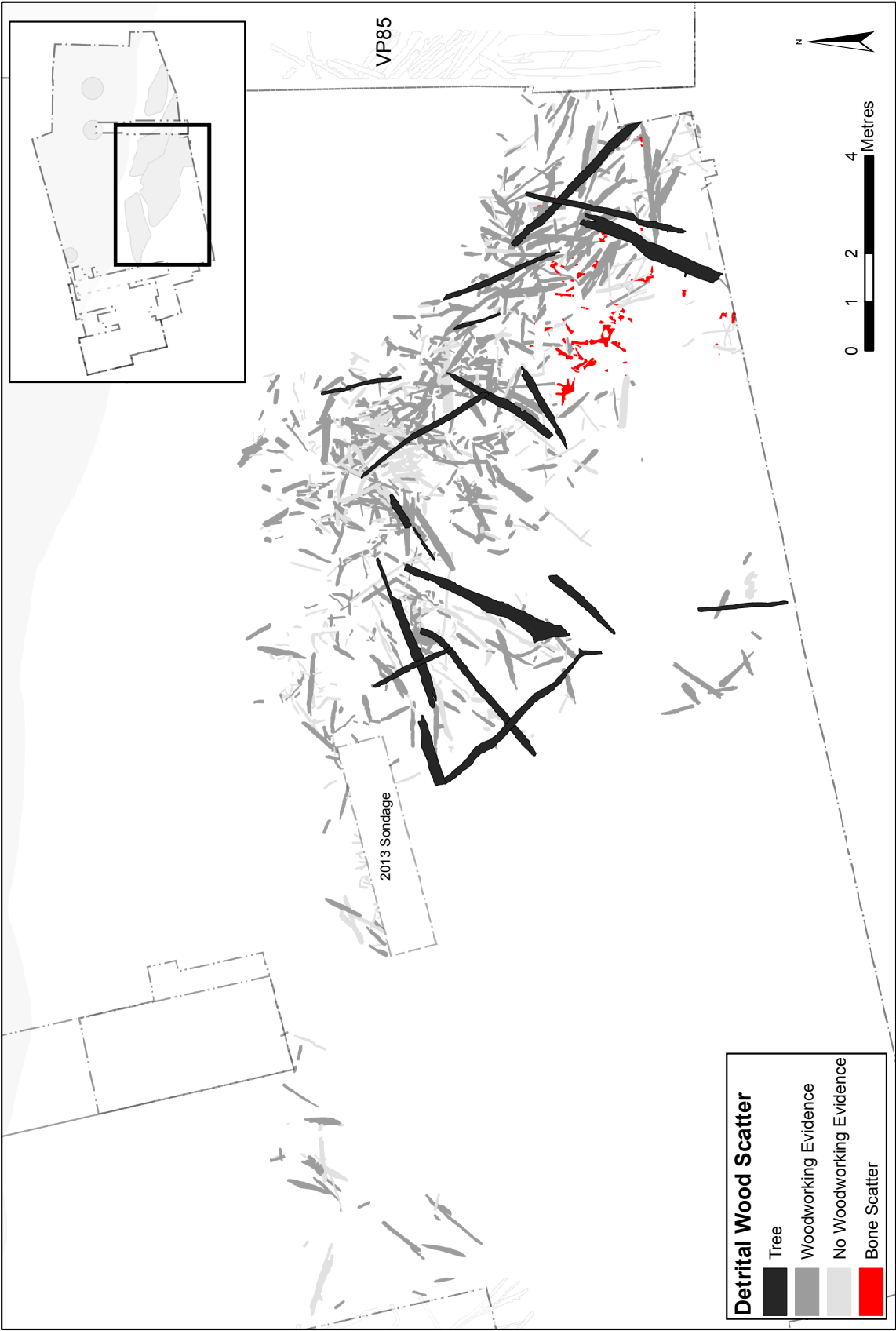


Figure 6.15: Plan of the detrital wood scatter highlighting trees and differentiating between woodworking and no woodworking evidence. In addition, the bone scatter (as described in Chapter 7) is located (Copyright Star Carr Project, CC BY-NC 4.0).

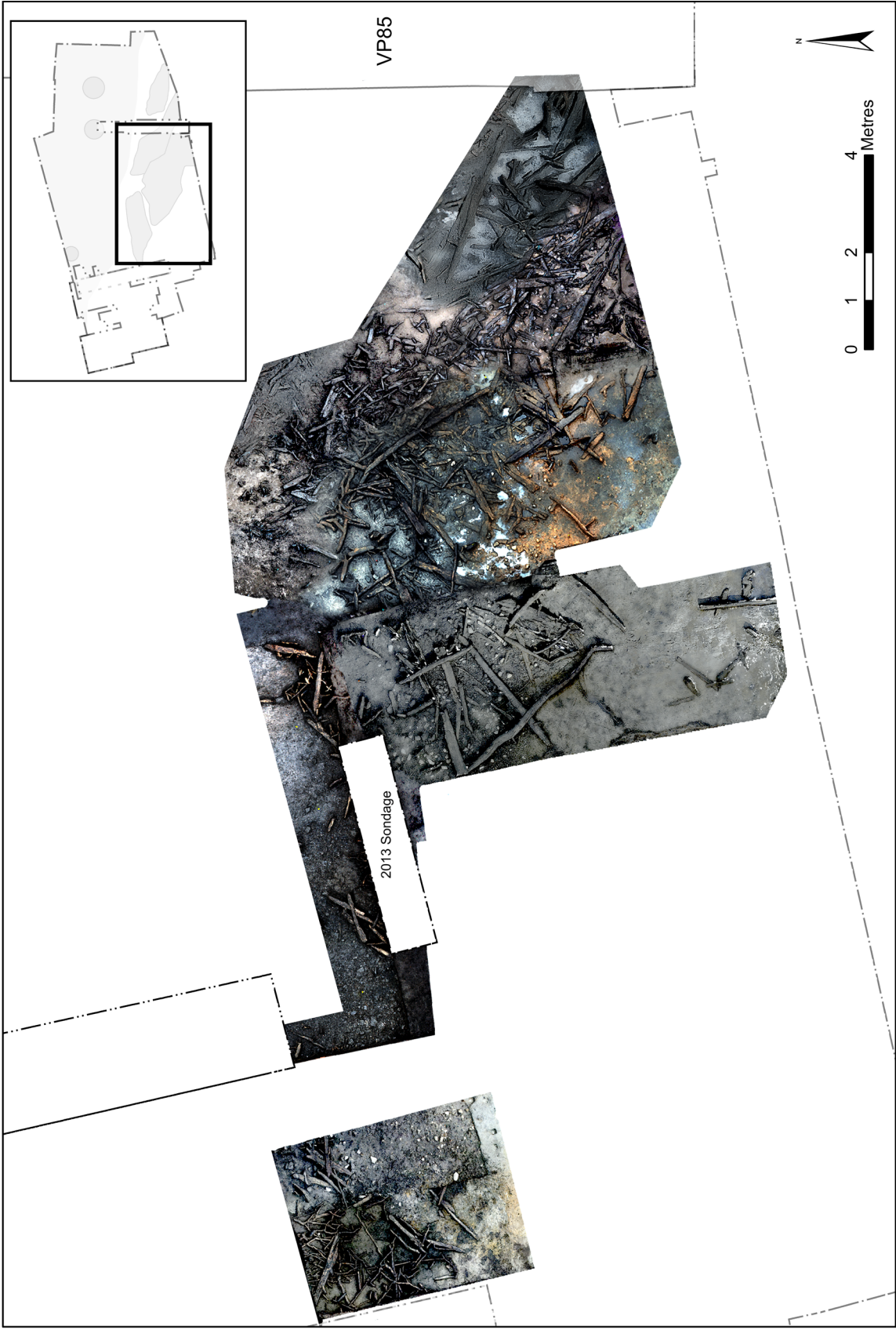


Figure 6.16: Composite orthophoto of the detrital wood scatter (exported from Agisoft Photoscan Pro) (Copyright Star Carr Project, CC BY-NC 4.0).

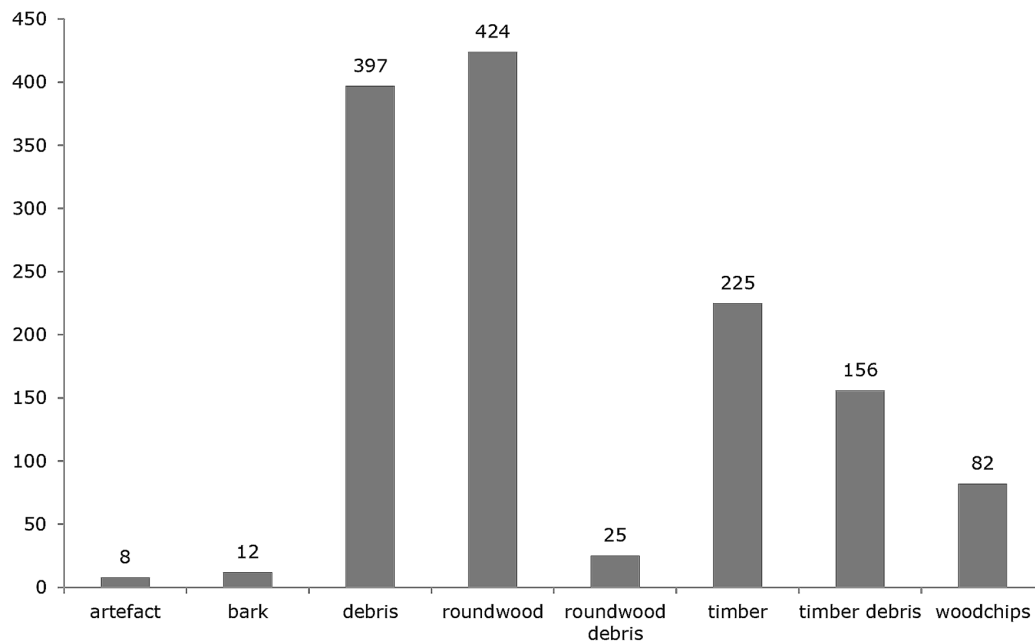


Figure 6.17: Wood categories for the detrital wood scatter (Copyright Star Carr Project, CC BY-NC 4.0).

Context		Frequency	% of assemblage
312	reed peat	109	8.2
317	detrital mud	609	45.8
319	sandy gravel	110	8.3
320	organic sand	374	28.1
Unrecorded	plan only	127	9.6
Total		1329	100.0

Table 6.9: Material from the detrital wood scatter by context.

As would be expected, condition generally improved with both depth and distance from the lake edge, though a high degree of compression was noted throughout. There is also some interesting ancient damage present: 11 items appear to have weathered before they became waterlogged and five items have snapped in antiquity, three of which have become physically dislocated from their constituent parts but mechanically refit with a high degree of confidence.

A total of 29 items (2%) are charred (Table 6.10). This occurs on a range of materials at varying intensities, which are spread throughout the deposit. Of particular interest is the charred distal/top end of stake <107784>, which suggests that the stake was burnt when it was in the ground. A total of 11 pieces of roundwood show evidence of beaver modification in the form of gnawed ends and side branches (Table 6.11). These are spread throughout the deposit but with a tendency to be towards the base of the scatter.

Trees

The 20 timbers classed as tree trunks (Table 6.12) vary in length from 1030–5530 mm and in horizontal diameter from 85–277 mm. The vertical diameters describe the high degree of compression seen in this area varying

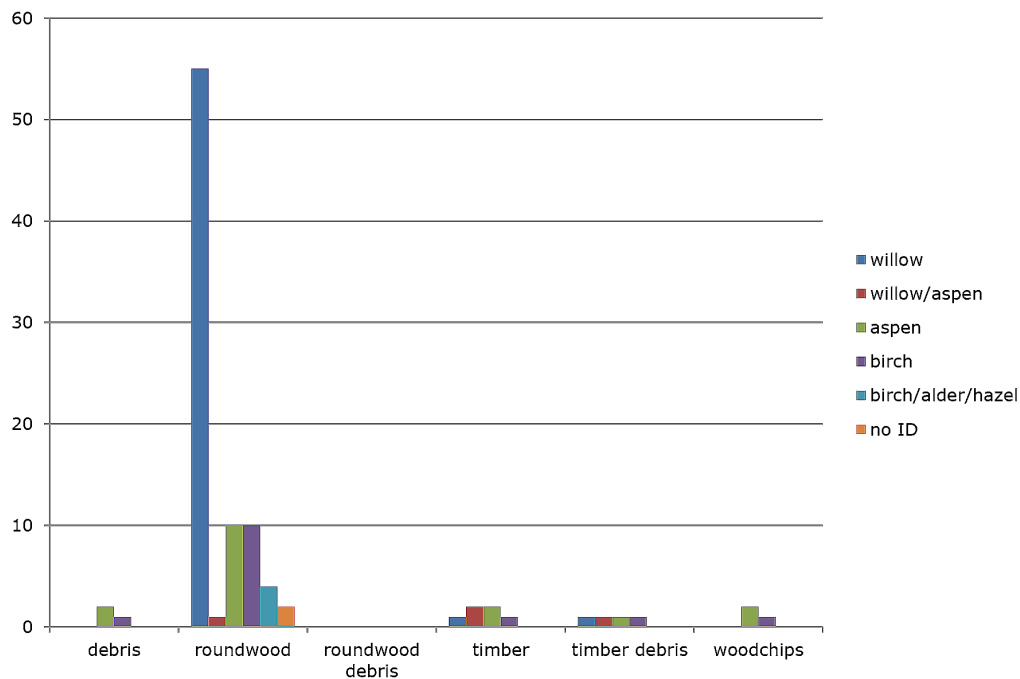


Figure 6.18: Frequency of taxonomic identifications from the detrital wood scatter by wood category (Copyright Star Carr Project, CC BY-NC 4.0).

from 18.8–76.0% of the horizontal values. The trees are generally straight grained with slow, even growth. They tend to have either no or occasional small-diameter (20–40 mm) side branches. The exception to this is <99932>, which is noted as having frequent small-diameter (c. 20 mm) side branches present. Bark is generally absent and is only noted from two items. One tree <109903> still had the root bole attached at the south-west end, suggesting this tree had fallen naturally and two others, <110390> and <110192>, also have some of the root bole remaining.

Woodworking evidence is noted from three of the trees. Of these, <99949> has had the upper surface tangentially split away. This is a negative of the conversion which produces the regularly occurring tangential outer split timbers. Tree <109557> is tangentially cleft at one end and has possible tool facets describing trimming to length at the other end and <110365> is radially half split at the proximal end where tearing and parallel chop marks cutting across the axis of the grain are visible on the split face.

Unsplit items

There are a total of 443 unsplit items that are not classed as trees, consisting of 424 pieces of roundwood, five timbers and 12 pieces of bark (Figure 6.17). Due to the high volume of roundwood encountered in the detrital wood scatter (425 items), a sub-sample of the material was recorded in detail (298 items) whilst the remainder (127 unworked items) were recorded in plan only.

The roundwood is distributed throughout the detrital wood scatter. This material varies in length from 40–2060 mm and in horizontal diameter from 6–95 mm. A total of 114 pieces have bark present and 74 (17%) have morphological traits that may be indicative of coppicing. A total of 45 pieces have tool facets describing trimming. The majority have been trimmed at one end and from one direction, though seven have been trimmed and torn, one has been trimmed at one end from two directions and one has been trimmed at both ends from one direction. A further two items have had side branches trimmed away, one of which has subsequently healed over. Roundwood stake <107784> has been trimmed at the proximal end from all directions to a point, whilst the distal/upper end is charred and possibly trimmed. There are a further 12 items that have

Number	Type	Split	Charred?	Notes
99808	RWDEB	Rad 1/2	Moderate	Proximal end, underside
99811	DEB	Rad (mod)	Moderate	One face and one end
99814	DEB	Tan	100%	–
99815	RW	N/A	Heavily	All over
99817	RW	N/A	Moderate	Underside, c. 10 mm deep
99890	TIM	Rad 1/3	Lightly	Upper face at one end
99903	RW	N/A	Moderate	–
99904	RW	N/A	Moderate	One end
103175	RW	N/A	Heavily	All over
103182	TIMDEB	Tan	Moderate	One part of face, max 4 mm
103194	DEB	Tan	Lightly	One side
103430	DEB	U/K	Moderate	–
103437	RW	N/A	Heavily	One end and one surface
103749	DEB	Tan	Moderate	One end
103780	DEB	Tan	Lightly	One end. One face
103800	TIMDEB	Tan	Lightly	One face
103812	DEB	Rad	Moderate	One face and one edge
107784	RW / STAKE	N/A	Moderate	Distal / top end is charred
109127	RW	N/A	Lightly	Upper face
109576	DEB	U/K	Heavily	One edge
109583	DEB	Tan	Heavily	One edge
109588	TIM	Tan	Lightly	Part of one face
109988	RW	N/A	Lightly	Underside
110173	TIM	Tan	Moderate	One edge
110357	RW	N/A	Moderate	One end
110360	TIM	Tan outer	Lightly	Outer, lower face. At one end
110472	TIMDEB	Tan	Moderate	Lower face
110509	RW	N/A	Moderate	Underside
110581	TIM	Tan outer	Moderate	Underside

Table 6.10: Evidence of charring from the detrital wood scatter.

Number	Context	Type	Notes
99822	312	RW	Distal end possibly beaver gnawed
99946	312	RW	1 end possibly beaver gnawed
99979	312	RW	1 end beaver gnawed
103104	312	RW	1 end possibly beaver gnawed
103123	312	RW	1 end beaver gnawed
103503	317	RW	3 × SB and proximal end beaver gnawed
109021	319	RW	1 end beaver gnawed
109361	319	RW	1 end possibly beaver gnawed
109574	317	RW	Both ends beaver gnawed
110573	320	RW	1 end beaver gnawed
113220	317	RW	1 end possibly beaver gnawed

Table 6.11: Evidence of beaver modification from the detrital wood scatter.

Find no.	Length (mm)	Horizontal diameter (mm)	Vertical diameter (mm)	Compression %
99801	5013	85	30	35.3
99894	2810	95	40	42.1
99932	3385	130	70	53.8
99949	3570	172	79	45.9
103148	1943	277	85	30.7
103785	1570	170	72	42.4
109030	3835	210	40	19.0
109557	2370	130	60	46.2
109903	3610	270	64	23.7
109905	5050	125	95	76.0
110192	1690	160	61	38.1
110365	3665	235	100	42.6
110390	1030	180	75	41.7
110401	1930	85	60	70.6
110528	3530	155	56	36.1
112992	4200	160	75	46.9
112996	1780	160	30	18.8
113239	1820	100	40	40.0
115699	1845	80	41	51.3
110377b	1975	160	60	37.5

Table 6.12: Trees from the detrital wood scatter.

been torn at an end and 11 items that have been beaver gnawed or probably beaver gnawed at one end, one of which has also had three side branches beaver gnawed. The beaver-gnawed material is distributed throughout the detrital wood scatter. Eleven charred items are distributed throughout the deposit.

The five unsplit items classed as timber are located throughout the detrital wood scatter. No woodworking or unusual taphonomy was noted and none of the timbers had any bark remaining. The timbers vary in length from 930–1690 mm and in horizontal diameter from 92–224 mm. None of the 12 pieces of bark shows any evidence of woodworking and it seems likely that this material has become detached from other items present in the scatter. The bark pieces were all very small, the largest piece measuring $162 \times 48 \times 8$ mm.

Split items

There are 860 split items, consisting of 200 split timbers, 156 pieces of timber debris, 397 pieces of debris, 82 woodchips and 25 pieces of roundwood debris (Figure 6.17 and Table 6.13). The split material classed as timber is present throughout the detrital wood scatter and varies in length from 500–3175 mm, in breadth from 28–205 mm and from 8–65 mm in thickness. It is only possible to estimate original diameters in four instances: 66, 70, 72 and 120 mm. The material is generally straight grained with side branches or knots noted from only six items (3%). Bark is only present on four items (2%).

Some 13% of the split timbers are radially aligned with thin radial splits, radial half, third and quarter splits all represented (Table 6.13). Tangentially cleft material accounts for 85% of the split timbers with tangential outer splits well represented and four items (2%) are of unknown conversion. Evidence for tooling is limited with six items (3%) showing faint traces of possible tool faceting describing trimmed ends, one of which <103807> appears cross cut. There is also a high prevalence within this material of the distinctive working traces seen in

Conversion	Timber	Timber debris and debris	Woodchips	Roundwood debris	Total frequency	Total %
Rad	12	56	14	1	83	9.7
Rad 1/2	8	0	0	4	12	1.4
Rad 1/3	5	3	0	2	10	1.2
Rad 1/4	2	1	0	1	4	0.5
Tan / Rad / Square	0	5	0	0	5	0.6
Tan	123	346	51	10	530	61.6
Tan – surface split away	0	1	0	0	1	0.1
Tan outer	46	58	2	7	113	13.1
x-grain	0	5	2	0	7	0.8
Off RW	0	0	1	0	1	0.1
U/K	4	78	12	0	94	10.9
Total	200	553	82	25	860	100.0

Table 6.13: Frequency of conversions from the detrital wood scatter.

this assemblage. Nineteen items have a distinctive lenticular cross section, 25 items have splits that fade out, 11 of which have this feature at both ends. In terms of possible evidence for groove-and-split 54 items are parallel sided, 20 items display traces of longitudinal parallel grooves on split faces and seven timbers have scars that describe the cleaving away of smaller split pieces. Five split timbers show light or moderate charring, generally to part of one face.

The timber debris (156 items) and debris (397 items) are considered together (totalling 553 items), forming the largest component of the detrital wood scatter assemblage (Figure 6.17). The material varies in length from 53–500 mm, in breadth from 10–130 mm and from 1–67 mm in thickness, and bark is present on 17 items (3%). The material is dominated by tangentially aligned material (410 items, 73%), 58 (10%) of which are tangential outer splits, and two of which are slabs (Table 6.13). Interestingly, there are five square cross-sectioned pieces with tangentially and radially aligned edges, possibly representing the ‘streamers’ which form between surfaces during cleaving. The radially aligned material (60 items, 11%) includes thin radial splits, radial half, third and quarter splits (Table 6.13). There are five cross-grained items (1%) and 94 items (14%) that are of unknown conversion.

A total of 49 items (7%) have been trimmed. Of these 36 have been trimmed at one end and from one direction, several of which are also torn, one item had been trimmed at one end but from two directions and two items have had side branches trimmed away. Six items (1%) show faint traces of possible hewing on split surfaces. There is also a high prevalence of the distinctive working traces noted from this assemblage: 16 have a lenticular cross section and 33 items have splits that fade out, 24 of which have this feature at both ends. In terms of possible evidence for groove-and-split working, 201 are parallel sided, 59 items display traces of longitudinal parallel grooves on split faces and four pieces have scars that describe the cleaving away of smaller split pieces. Twelve items show evidence of charring, typically light or moderate and generally to part of one face.

The 82 items classed as woodchips are present throughout the detrital wood scatter. They vary in length from 43–220 mm, in breadth from 16–115 mm and from 3–22 mm in thickness. As with other categories of split material, the woodchips are dominated by tangentially aligned material (53 items, 65%), two of which are slabs: a tangential outer split consisting of bark and sapwood only, possibly indicative of bark removal (Table 6.13). There are also 14 radially aligned chips, two cross-grain, one off-roundwood and 12 of unknown conversion. Unusually for a woodchip assemblage, but as is the norm at Star Carr, evidence for tool facets is limited. One item appears trimmed at both ends <103678> and two items at one end: <109198> and <109367>. Two of the chips are gnarled and appear to have been detached from around a knot: <103776C and D>.

Finally, a total of 25 items are classed as roundwood debris and are present throughout the detrital wood scatter, varying in length from 78–440 mm, in breadth from 23–60 mm and from 9–32 mm in thickness. Where

original diameters are reconstructable, they vary from 26–60 mm. Bark is present on two items. Eight items (32%) are radially aligned with thin radial splits, radial half, third and quarter splits all present. 17 (68%) are tangentially split with tangential outer splits well represented (Table 6.13). One item has possibly been trimmed at one end and one <99808> is moderately charred on the underside at the proximal end.

Discussion of the detrital wood scatter

The material making up the detrital wood scatter has been generated through a range of woodworking activities, most (if not all) of which were probably carried out on the dryland parts of the site. There is no evidence that the material making up this assemblage has been manufactured or selected specifically for deposition in this area (such as uniformity in size, shape or form), as might be the case in a formal trackway or platform, and there is no apparent coherency or organisation to the scatter. As such, it resembles an accumulation of waste material produced through a range of tasks. However, it is difficult to see how this assemblage would have built up either through deliberate, ad-hoc disposal, or through natural, re-deposition of material originally discarded on the dryland. Material washed down from the dryland is likely to have become trapped in the waterside vegetation or, if this had been cleared, the wood is likely to have built up along the shore as the action of the lake would have transported it back towards the water's edge. This would also apply to material discarded deliberately into the lake. We should also consider the size of this material. Whilst woodchips and smaller roundwood may have been transported into the lake through natural processes, or thrown from the dryland, this is unlikely to have been the case for the larger material, such as the 5 m long trees or the 3 m long split timbers.

Rather than representing ad-hoc disposal or natural accumulation, we would suggest that the scatter formed through episodic deposition of material in order to stabilise the soft basal sediments and facilitate access into an area of deeper water away from the shore. This is supported by a number of lines of evidence. First, the broadly linear arrangement exhibited by the main concentration of material suggests a degree of intentionality in the formation of the scatter and its interpretation as a form of trackway. Second, there are several cases of items that have broken and become dislocated in antiquity, hinting perhaps at some trample occurring within the deposit. Finally, the gap in the detrital wood scatter corresponds with a dense concentration of animal remains, including whole limbs, which were deposited whilst still articulated (and probably still fleshed) into the wetland along with two red deer antler frontlets, whilst several animal skulls were deposited towards the south-east end of the scatter (see Chapter 7). As this material appears to have been deliberately deposited between 9.5 m and 14.5 m from the shore, it is possible that the detrital wood scatter was laid down to assist access to these areas and to facilitate these depositional acts.

The lake edge platforms

Three lake edge platforms (western, central and eastern) were excavated during the current campaign. The central platform, first encountered in the 1985 excavations (trench VP85a) was an early target of the investigations. However the size, complexity and presence of two further lake edge platforms came as a surprise. The setting, form and construction of the three platforms is markedly similar, with each starting at the base of the contour describing the drop off of the lake edge, and running through the wetland, either parallel to the shore or (in the case of the central platform) at an angle from it. Each is broadly linear in plan and is defined by a series of large trees and split timbers defining the primary axis of the feature (Figure 6.3). All three platforms sit relatively high within the wetland sequence and are, as a result of this, the least well-preserved wooden remains encountered (Figure 6.4). Each platform will be considered individually below with a summary discussion at the end of the section.

Western platform

Introduction

The western platform is a broadly linear arrangement of split timbers and entire trees that runs through the lake edge wetland, almost parallel to the shore on the western side of the site. It is a substantial structure, 4.7 m

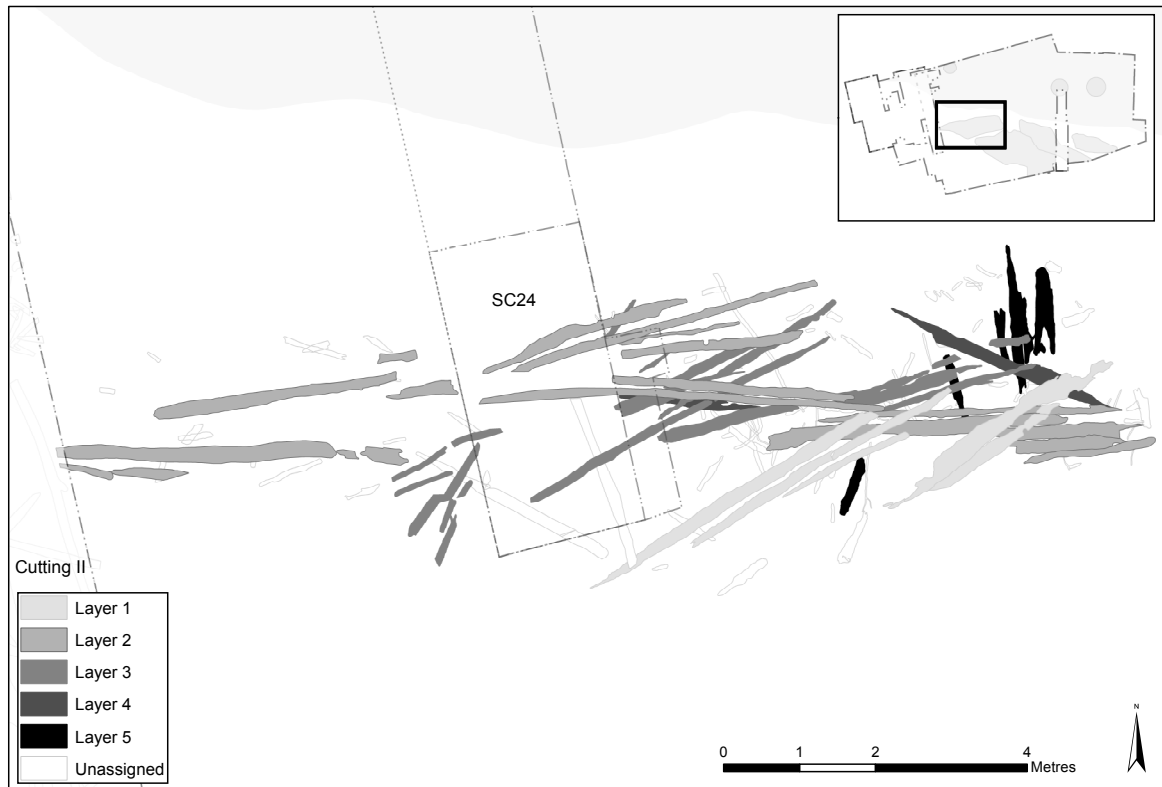


Figure 6.19: Plan of the western platform showing the five layers (Copyright Star Carr Project, CC BY-NC 4.0).

wide (north-south) and over 14.7 m long (east-west), though its full extent would have taken it several metres further to the west, into cutting II (Figure 6.19 and 6.20). The platform is formed of a series of five semi-discrete layers of timber, including split timbers and trees, with a dense horizon of generally north-south aligned roots above and deposits of largely unworked roundwood (mostly brushwood) below. The roots above the platform are markedly similar in appearance to the upper brushwood reported by Clark and could represent a similar deposit (Figure 2.3). Although built in several layers, the structure shows no evidence for separate phases of construction or use, there being no build-up of wetland deposits between the layers of wood, and appears to have been built in a single episode.

The platform was first encountered in 2007, when a series of split timbers, roughly parallel with the lake shore were recorded during the excavation of trench SC24 (Conneller et al. 2012). The continuation of these timbers was recorded in 2010 when SC24 was extended 0.5 m to the east to assess level of deterioration (Milner 2010), and a series of split timbers, assumed to be the westerly extension of the same structure, were recorded in the section of cutting II (Conneller et al. 2012). The remainder of the platform was excavated and recorded in its entirety during the 2013 and 2014 excavations. Due to the difficulties of recording degraded wood within the limited exposure of SC24 it has not been possible to link the 2007/2010 wood records with the material excavated in 2013/2014.

Analysis

Overview

A total of 141 wood records are assigned to the western timber platform. Of these, 110 form the platform itself (including two stakes classed as artefacts: <98878> and <110020>). Most were timbers, including 23 items classed as trees, though there are also quantities of roundwood and debris (Figure 6.21). There are a further



Figure 6.20: Composite orthophoto of the western platform (exported from Agisoft Photoscan Pro) (Copyright Star Carr Project, CC BY-NC 4.0).

29 sub-samples from the underlying brushwood and two beaver-gnawed pieces of roundwood from beneath the platform: <113449> and <113772>. The timbers of the structure lay predominantly within reed peat (312), though several items were recovered from the detrital mud (317), and the basal mineral sediment (320). The two pieces of beaver-gnawed roundwood were recovered from a grey-orange mottled till beneath the platform.

Taxonomic identification of material from the 2010 excavations was carried out by Allan Hall. This showed that the larger timbers and trees were exclusively identified as aspen (n= 10) whilst the majority of the roundwood were identified as willow (n=20) with occasional identifications of aspen (n=2). A further 13 items from the 2013–2015 have been examined by AR. These show the same pattern, with all 10 samples from the large timbers identified as aspen (Figure 6.22).

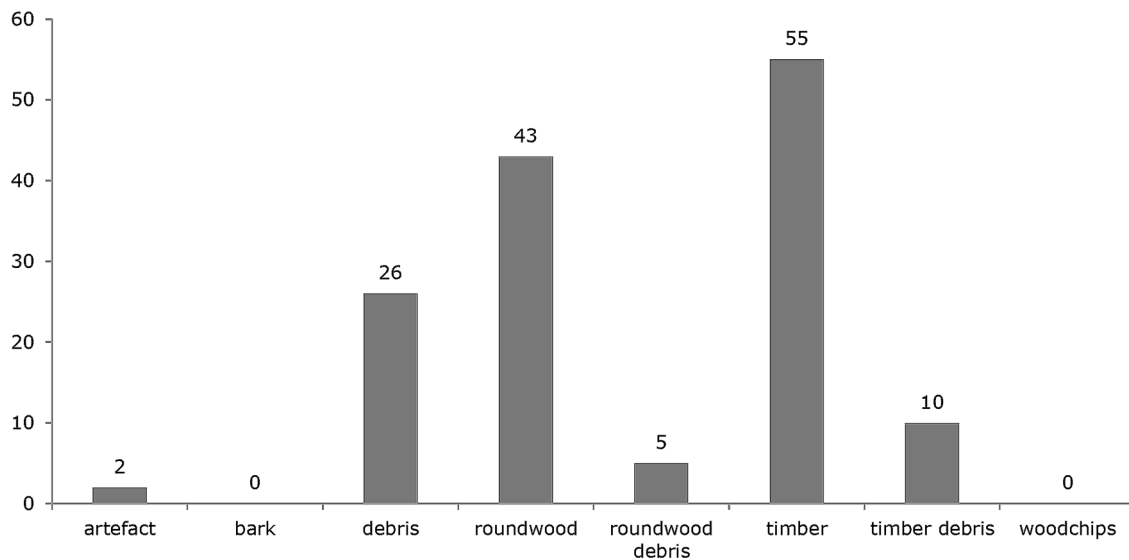


Figure 6.21: Wood categories from the western platform (Copyright Star Carr Project, CC BY-NC 4.0).

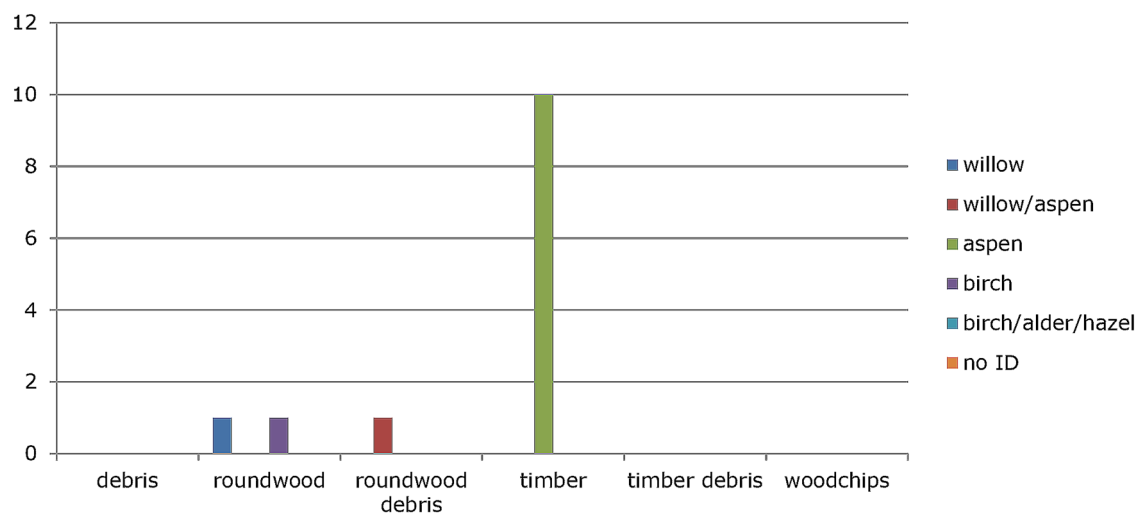


Figure 6.22: Frequency of taxonomic identifications from the western platform by wood category (2013–2015) (Copyright Star Carr Project, CC BY-NC 4.0).

Five items with evidence for charring were recorded from within the platform (three classed as timber and two as timber debris) representing 7% of the material (Table 6.14). Charring varies from slight to heavy with three items charred at one end, one item charred on one face and one item completely charred into an amorphous lump. Four pieces of roundwood display evidence of beaver modification having been beaver gnawed at one or both ends (Table 6.15). Two were recovered from the basal till beneath the platform, one from the brushwood beneath the platform timbers <109909> (which also has a possibly trimmed end) and one from amongst the timbers of the platform (Table 6.15).

Trees

Twenty-three of the timbers are classified as tree trunks (Figure 6.23 and Table 6.16). These vary in length from 1100–4485 mm and in horizontal diameter from 50–270 mm. The high degree of compression is evidenced by the vertical diameters, which vary between 11–62% of the horizontal values. The proximal/distal orientation of the trunks is only apparent in five cases, with no particular pattern noted. Timber <109924> has a possible root bole present at the southern end which may represent the reuse of a fallen tree. The timbers are generally straight grained, with occasional small (diameter c. 20 mm) side branches or knots present and no large side branches were noted. Bark was generally absent. The material is in poor to moderate condition with little surface data visible and many of the ends are degraded and ‘feathering’ away. Possible evidence for trimming was noted from a single item <110101>, which may have been trimmed from one direction at the distal end. In addition, timber <110134> is truncated along its upper surface, though it is unclear if this is due to degradation, splitting or possibly even wear and timber <109556> has a visible tear running from halfway along its length, to the distal end.

Unsplit items

The main body of the platform, excluding the material classed as trees, contains 25 unconverted items: 19 pieces classed as roundwood and six classed as timber (Figure 6.21). These items vary in length from 90–3165 mm and the long axis of the diameter from 12–195 mm. No facets on trimmed ends or side branches were recorded. Roundwood <99246> shows signs of beaver gnawing at both ends. Timber <110103> is also of interest having been smashed in the middle, probably in antiquity. It is also charred at one end.

In addition, a discrete layer of roundwood lay under the central and eastern timbers of the platform, most of which resembled brushwood (crooked stems with small side branches still attached). A sub-sample of 29 items were recovered and recorded from this deposit. These consist of two items classed as timber debris (both tangential outer splits), four pieces of debris (two tangentially aligned, one radially aligned and one of unknown

Number	Type	Split	Charred?	Notes
99080	TIM	Tan	Moderate	One end
99082	DEB	U/K	Heavily	All over. Charred into amorphous lump
109582	DEB	Tan	Lightly	One end
110103	TIM	N/A	Moderate	One end
113791	TIM	Tan outer	Moderate	Outer / lower face

Table 6.14: Charring from the western platform.

Number	Context	Position	Type	Notes
99246	317	platform	RW	both ends beaver gnawed
109909	312	brushwood beneath platform	RW	1 end beaver gnawed and possibly trimmed
113449	308	underneath platform	RW	1 end beaver gnawed
113772	308	underneath platform	RW	1 end beaver gnawed

Table 6.15: Evidence for beaver activity, western platform.

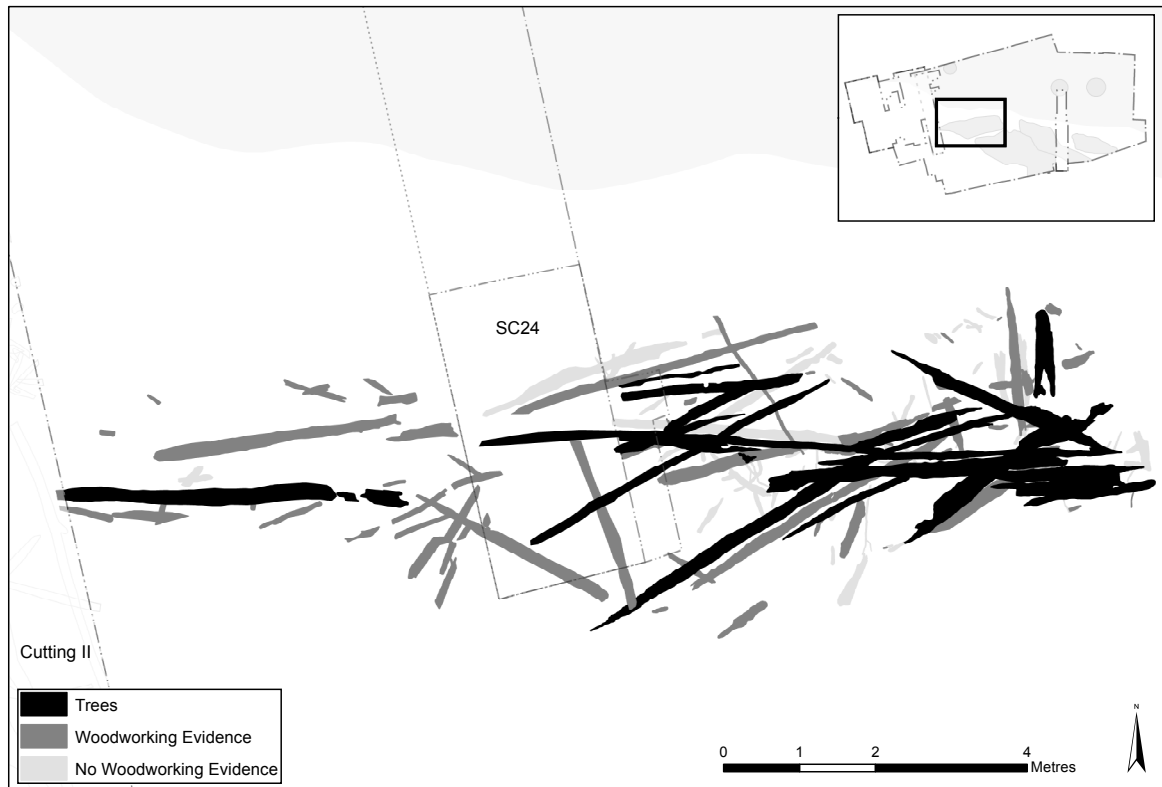


Figure 6.23: Plan of the trees, woodworking evidence and no woodworking evidence from the western platform (Copyright Star Carr Project, CC BY-NC 4.0).

conversion) and 23 pieces of roundwood, one of which is half split. The majority of the roundwood has bark present and varies in length from 72–940 mm and the long axis diameters vary from 7–56 mm. The only evidence for secondary working was recorded from <109909> which has been trimmed and beaver gnawed at one end. A comparable deposit of brushwood with smaller quantities of worked material lay beneath the western end of the platform, where it extended into the brushwood between SC24 and cutting II (see above).

Split items

The main body of the platform contains 60 split items: 26 classed as timber, eight as timber debris, 22 as debris and four as roundwood debris. Tangentially converted material dominates the assemblage with 35 items (59%) aligned in this plane. There are 14 radially split items (23%) and 11 items of unknown conversion (18%) (Table 6.17). The split material classed as timber varies in length from 505–3075 mm, in breadth from 66–230 mm, in thickness from 9–91 mm and is dominated by tangentially aligned material (17 items) with six radially split items and two of uncertain conversion. The timber debris and debris varies in length from 83–498 mm, in breadth from 29–145 mm, in thickness from 3–65 mm and is dominated by tangentially aligned items (n=18) with seven radially aligned items and nine of uncertain conversion.

Central platform

Introduction

The central platform is the largest and most substantial of the lake edge platforms, consisting of three layers of material (mostly large split timbers and trees) that form an overall structure that is 6 m wide and over 17 m long.

Find no.	Length (mm)	Horizontal diameter (mm)	Vertical diameter (mm)	Compression %
99212	4430	230	56	24.3
109556	1910	105	24	22.9
109924	3535	270	30	11.1
109938	2010	160	40	25.0
109949	1180	270	168	62.2
109952	2410	115	35	30.4
109953	4030	100	40	40.0
109964	2504	140	70	50.0
109965	4485	180	70	38.9
110003	3880	110	45	40.9
110042	1940	175	38	21.7
110043	3950	215	39	18.1
110101	1745	50	25	50.0
110107	2405	130	38	29.2
110110	1785	165	35	21.2
110123	1905	110	45	40.9
110125	1100	128	41	32.0
110126	1810	122	22	18.0
110132	2115	175	30	17.1
110134	1680	210	56	26.7
110141	1610	140	40	28.6
110149	2225	165	22	13.3
110150	2980	170	33	19.4

Table 6.16: Trees from the western platform.

Conversion	Timber	Other	Total frequency	Total %
Rad	1	3	4	6.7
Rad 1/2	3	2	5	8.3
Rad 1/3	3	0	3	5.0
Rad 1/4	0	2	2	3.3
Tan	14	17	31	51.7
Tan – surface split away	1	0	1	1.7
Tan outer	2	1	3	5.0
U/K	2	9	11	18.3
Total	26	34	60	100.0

Table 6.17: Conversions from the main body of the western platform.

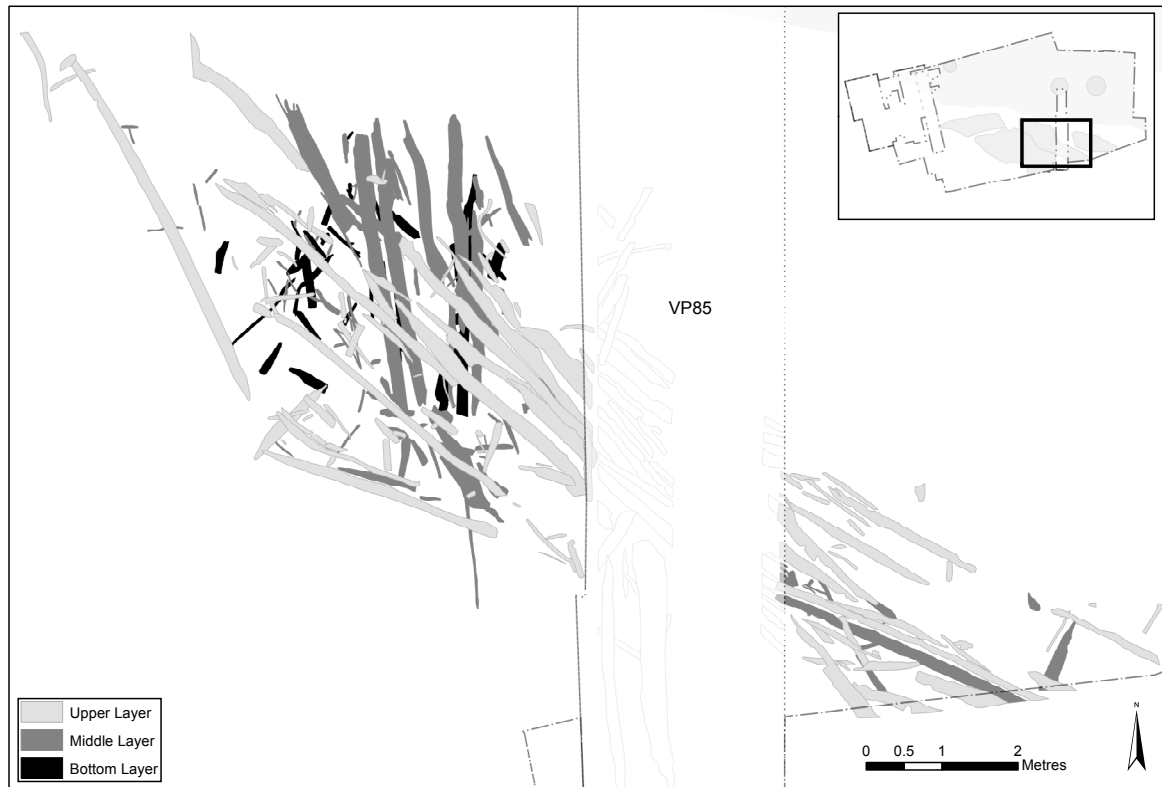


Figure 6.24: Plan of the central platform by layer (Copyright Star Carr Project, CC BY-NC 4.0).

It runs on a north-west to south-east alignment through the wetland part of the site, with its northern end close to the lake shore and its southern end extending beyond the edge of the excavated area (Figures 6.24 and 6.25). The platform consists of three layers of timber but was constructed in a single event, probably to facilitate access into the wetlands and possibly to areas of open water further from the shore. With the exception of a discrete cluster of worked flint, there is very little other archaeological material associated with it, though small quantities of animal bone, flint, and worked antler were recorded in the immediate surroundings.

The platform was first encountered during the 1985 excavation of trench VP85A and again during the extension of the same trench in 1989 (Cloutman and Smith 1988:39; Mellars et al. 1998, 47). During this work a group of parallel timbers were recorded running diagonally across the trench, with two further timbers to the south. Analysis of this material identified both radially and tangentially cleft timbers as well a piece of roundwood with a chop-and-tear end, and a pointed stake displaying significant surface charring (Mellars et al. 1998). The timbers produced some clear surface data and evidence of tooling and secondary working including clear, parallel, longitudinal grooves, which form part of the suite of evidence that has given rise to the style of woodworking described as ‘groove-and-split’ (Chapter 28).

Trench VP85A was re-excavated and extended to the west in 2010, exposing a continuation of the same parallel timbers. The western extent of the platform was then fully excavated during the 2013 season and a short section to the east was excavated in 2015.

Analysis

Overview

A total of 276 wood records are assigned to this structure (Figure 6.26): 130 to the upper layer, 66 to the middle layer and 80 to the bottom layer. The majority of these are timber (including 26 trees) and roundwood, though



Figure 6.25: Composite orthophoto of central platform (exported from Agisoft Photoscan Pro) (Copyright Star Carr Project, CC BY-NC 4.0).

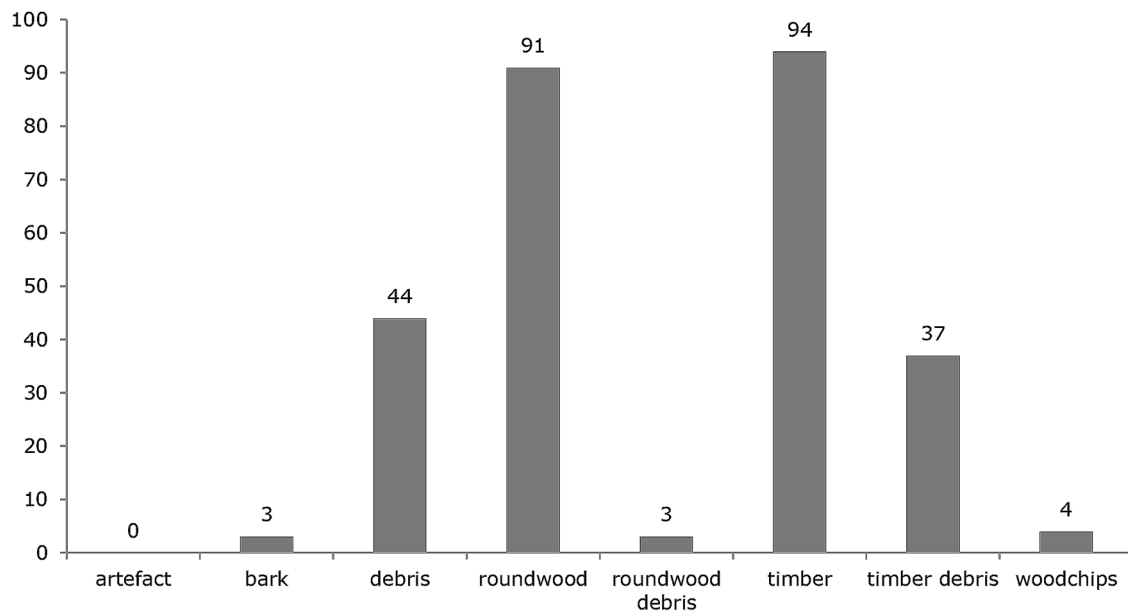


Figure 6.26: Wood categories for the central platform (Copyright Star Carr Project, CC BY-NC 4.0).

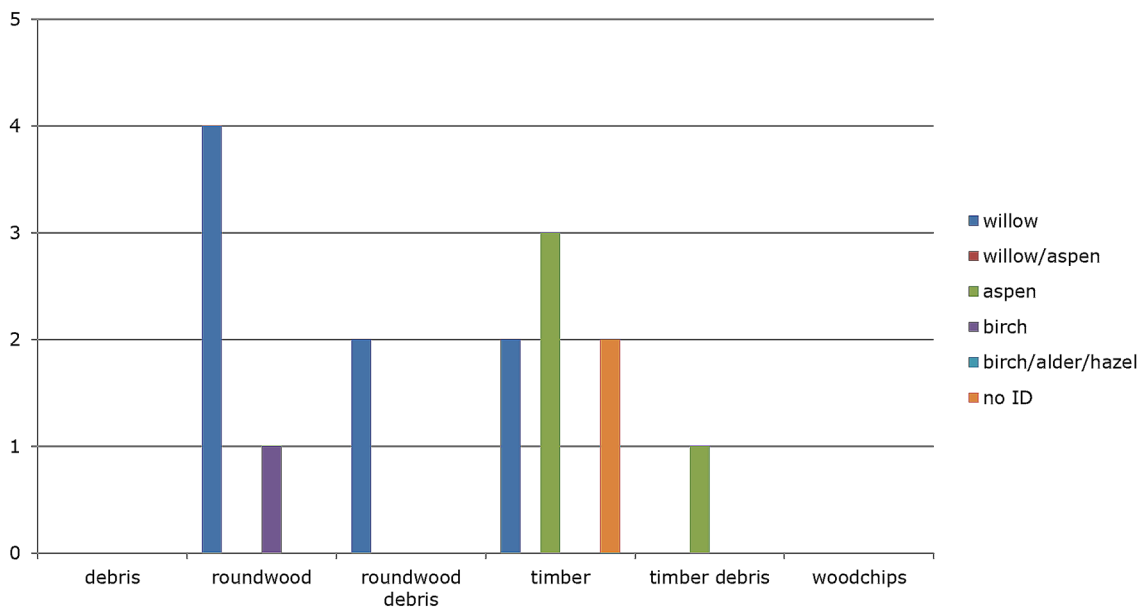


Figure 6.27: Frequency of taxonomic identifications from the central platform by wood category (Copyright Star Carr Project, CC BY-NC 4.0).



Figure 6.28: Intrusive sand in the middle layer of the central platform (left); detail of resulting dislocation of timbers (right) (Copyright Star Carr Project, CC BY-NC 4.0).

significant quantities of debris and timber are also present along with very small quantities of roundwood debris, woodchips and bark. Of the 91 items classed as roundwood, 49 were recorded in plan only and not subjected to detailed recording. A total of 15 items from this area were submitted for taxonomic identification with willow, aspen and birch all represented (Figure 6.27). Willow was the most common species identified for roundwood, whilst the timbers were identified as willow and aspen.

The majority of the wooden remains of this structure lay within reed peat (312) with the lowest elements recovered from detrital mud (317). Sections of the middle and lower layer were truncated by a deposit of intrusive sand, deposited by a natural spring and forced through the peat deposits from the underlying geology by artesian pressure. The spring has destroyed the wood it has passed through and dislocated timbers it has passed in close proximity to (Figure 6.28).

A total of 11 items representing 2% of the material assigned to the central platform showed evidence of charring. The majority ($n=10$) came from the top layer (five larger charred items and five pieces of roundwood) though a single piece of charred roundwood was present in the middle layer (Table 6.18). In addition there were six pieces of charred roundwood, five from the upper layer and one from the middle layer. Three pieces are charred heavily on one end or face, two are moderately charred all over, and one item is lightly charred along one edge.

Trees

Twenty-six items are classed as tree trunks (Figure 6.29 and Table 6.19). The majority of these (17 items, 65%) are in the upper layer with eight (31%) in the middle layer and one (4%) in the lower layer. These vary in length from 895–5180 mm and in horizontal diameter from 80–230 mm. The high degree of compression seen in the material from this structure is described by the vertical diameters which vary from 10–65% of the horizontal values. Bark was only noted from a single item <99893> on which a long strip of bark 12 mm thick was present. The trees are straight grained with moderate small side branches (diameter c. 30–40 mm) noted from three items (<99746>, <99803> and <99893>) and a single side branch noted from two items (<99804> and <116054>), diameter c. 25–30 mm.

Three items display evidence of conversion including timber <99803>, which had faint parallel grooves on its surface, probably relating to groove-and-split type woodworking (see Chapter 28). In addition, the distal end of a side branch from <99804> had probably been beaver gnawed (though the condition of the wood precluded a definite identification of beaver gnawing), and the distal end of <116054> is radially quarter split (though it is unclear if this is a cultural or natural conversion).

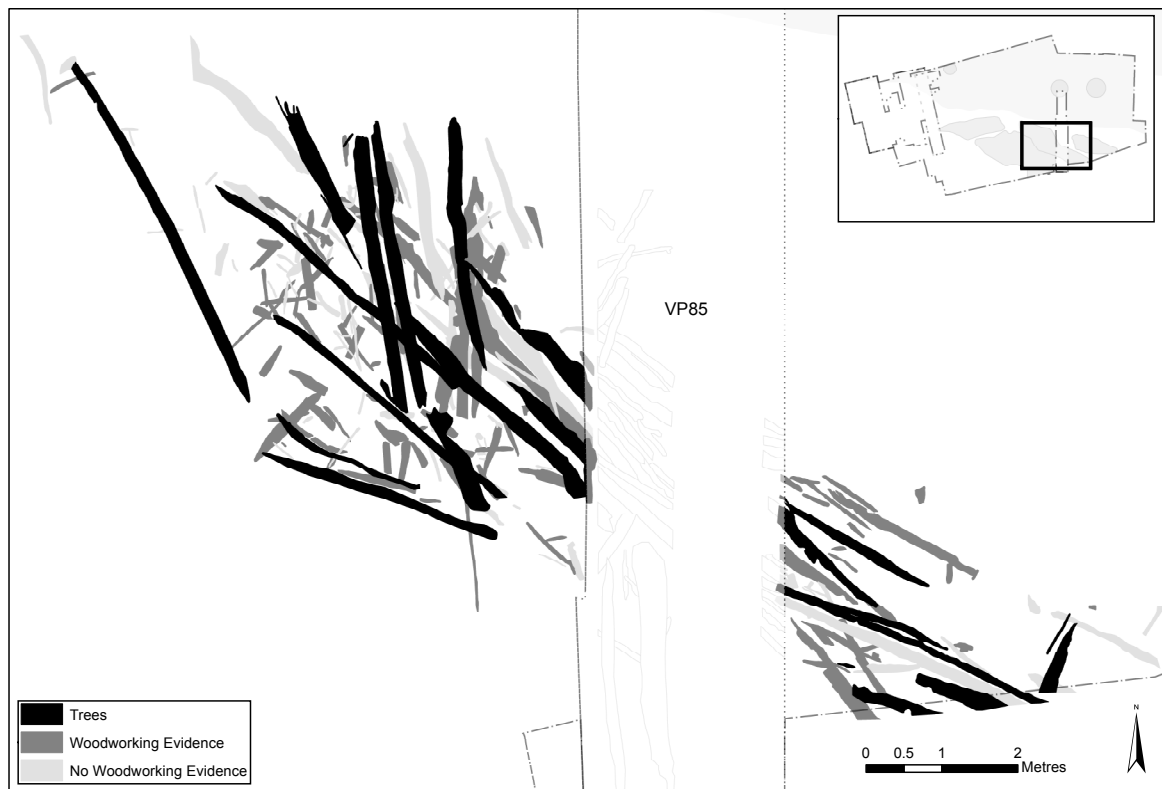


Figure 6.29: Plan of the trees, woodworking evidence and no woodworking evidence in the central platform (Copyright Star Carr Project, CC BY-NC 4.0).

Type	Find no.	Layer	Charring	Notes
Tree	99893	top	lightly	underside for 1 m at the proximal end
Timber (tan)	99960	top	moderate	at one end on outer / sapwood surface
Timber (rad)	99888	top	lightly	both faces at one end
Debris	99240	top	heavily	all over
Debris	99813	top	100%	all over

Table 6.18: Charring evidence from the upper layer of the central platform.

Unsplit items

There are 58 unsplit items, not including material classed as trees. These include 91 pieces of roundwood, 11 timbers, three fragments of bark and two pieces of debris (Figure 6.26). Due to the large volume of roundwood encountered, a sub-sample of the material was recorded in detail (42 items) with the remainder (49 items) marked on plan only.

The roundwood is spread fairly evenly through the top, middle and bottom layer of the platform. Ten recorded items have bark present and seven items (8%) have morphological traits often associated with copiced material (see Chapter 28). There are no tool facets present, although two items (<103262> and <103498>) are clearly torn at the proximal end. Three pieces are charred heavily on one end or face, two are 100% moderately charred and one item is lightly charred along one edge. Five of the charred items are from the upper layer

Find no.	Length (mm)	Horizontal diameter (mm)	Vertical diameter (mm)	Compression %
99726	2910	150	22	14.7
99737	1950	135	19	14.1
99738	1400	205	30	14.6
99739	4200	130	32	24.6
99745	3590	224	40	17.9
99746	1560	156	40	25.6
99803	3890	150	30	20.0
99804	5180	138	40	29.0
99893	3220	170	80	47.1
99963	2425	80	52	65.0
103117	1542	217	32	14.7
103147	3400	160	67	41.9
103263	3901	150	60	40.0
103277	2390	230	55	23.9
103293	2445	160	80	50.0
103294	3750	180	95	52.8
115307	1230	200	20	10.0
115318	1111	185	72	38.9
115322	1715	180	62	34.4
115324	2222	140	19	13.6
115658	1385	155	42	27.1
115660	2330	110	32	29.1
115662	3460	160	20	12.5
115680	3660	100	20	20.0
116054	1775	143	75	52.4
116061	895	165	63	38.2

Table 6.19: Trees from the central platform.

and one from the middle layer. The recorded roundwood varies in length from 80–3740 mm and in horizontal diameter from 15–105 mm.

The 11 items classed as timber are generally good-quality, straight-grained, knot-free material, none of which has bark present. These larger items occur almost exclusively in the top layer with a single item present in each of the middle and lower layers. No woodworking, charring or unusual taphonomy was noted. The material varies in length from 394–3010 mm and in horizontal diameter from 100–160 mm.

None of the three fragments of bark shows any evidence of woodworking. Although these may have formed an integral part of the construction of the platform, it is equally likely they have fallen away from other items used in the construction of the platform. The largest piece measures $534 \times 142 \times 9$ mm. Both pieces of debris are from the top layer. One of the pieces <99728> is a long piece of roundwood that has degraded into a radial half, the other <99813> is a completely charred amorphous lump measuring $270 \times 105 \times 10$ mm.

Split items

A total of 143 split items form part of this structure (Table 6.20): 57 items classed as timber, 37 as timber debris, 42 as debris, four as woodchips and three as roundwood debris. The majority of the material is

Conversion	Timber	Timber debris and debris	Woodchips	Roundwood debris	Total frequency	Total %
Rad	3	9	1	0	13	9.1
Rad 1/2	0	0	0	3	3	2.1
Rad 1/3	0	0	0	0	0	0.0
Rad 1/4	0	1	0	0	1	0.7
Rad 1/8	1	0	0	0	1	0.7
Tan	28	47	3	0	78	54.5
Tan – surface split away	0	0	0	0	0	0.0
Tan outer	23	11	0	0	34	23.8
U/K	2	11	0	0	13	9.1
Total	57	79	4	3	143	100.0

Table 6.20: Conversions from the central platform.

tangentially aligned (112 items, 78%), with only 18 items radially aligned (13%) whilst 13 are of unknown conversion (9%).

The split material classed as timber is present throughout the three layers and varies in length from 515–3600 mm, in breadth from 34–210 mm and from 2–53 mm in thickness. This material is generally straight grained, with side branches only noted on one item, and generally lacking bark (present on one item only). Four items are thin, radial splits with the remainder tangentially aligned, 23 of which are the outer split (Table 6.20). No tool facets pertaining to trimmed ends were recorded. There is a tendency for these items to be parallel sided ($n=15$), and seven items show traces of parallel longitudinal grooves on the split surfaces, possibly related to groove-and-split. Seven items also have a chamfer running down one or both edges and three have a lenticular cross section. In addition a single timber from the top layer <99960> has moderate charring at one end on the outer/sapwood surface (Table 6.18).

The timber debris and debris are present through all three layers of the platform and are considered together. The material varies in length from 74–540 mm, in breadth from 17–150 mm, in thickness from 4–80 mm, and is dominated by tangentially aligned items (58, 11 of which are outer splits), with ten radially aligned items and 11 of uncertain conversion (Table 6.20). Several items display characteristics associated with groove-and-split woodworking; three have longitudinal grooves, 17 are parallel sided and the morphology of eight items has led to the suggestion that they may be debris produced by the groove-and-split technique (see Chapter 28). In addition, two items have a lenticular cross section. Two items, both from the top layer, are charred; radially split timber debris <99888> is lightly charred on both faces at one end, whilst debris <99240> of unknown conversion is completely charred (Table 6.18). Finally, one tangential outer split <99241> is a piece of woodworking debris where a knot has been removed from a larger timber, a common carpentry practice.

Four woodchips were present in the upper (1 item) and lower (3 items) layers. They vary in length from 76–155 mm, in breadth from 12–35 mm and from 5–10 mm in thickness. Three are tangentially aligned and one is radially aligned (Table 6.20). The three pieces of roundwood debris were located in the middle and lower layer. All are half splits from small-diameter wood (original diameters vary from c. 33–56 mm) (Table 6.20).

Eastern platform

Introduction

The eastern platform is a linear arrangement of timbers running north-west/south-east, roughly parallel with the lake shore, at the eastern end of the site. The platform is 4.5 m wide and extends for at least 11 m. Its eastern extent is difficult to establish but timber <114883> extends beyond the edge of the trench, and it is possible that the platform continues in this direction (Figures 6.30 and 6.31).



Figure 6.30: Plan of the eastern platform showing evidence for trees, woodworking and timbers with no signs of woodworking (Copyright Star Carr Project, CC BY-NC 4.0).

This bulk of the platform timbers lie in a single discrete layer and consists mostly of timber (including 17 trees) with smaller quantities of debris and roundwood. This appears to have been constructed in a single phase and acted either as a trackway through the wetland edge or a platform on which activities could be undertaken. A second layer of material, consisting entirely of medium-sized split items, all but one of which are tangentially aligned, lay below this and was separated by approximately 100 mm of sediment. These are either an earlier phase of activity or perhaps are residual timbers associated with the detrital wood scatter.

Analysis

Overview

A total of 50 wood records are assigned to this structure, 43 items forming part of the main structure and seven lying beneath. A single item, radially split timber debris <115333> from the lower layer, displays light charring. The wooden remains of this structure lay entirely within reed peat (312) with the lowest elements of the structure recovered from the base of this deposit. The majority of the material is timber, much of which is classed as trees. There are also small quantities of roundwood and assorted debris present (Figure 6.32). Four timbers were identified to taxa, all of which were identified as aspen.

Trees

The platform contains 17 timbers classed as tree trunks (Table 6.21). Four of these were identified as willow/aspen. The trees are all straight grained with no evidence of side branches noted, none have bark present and

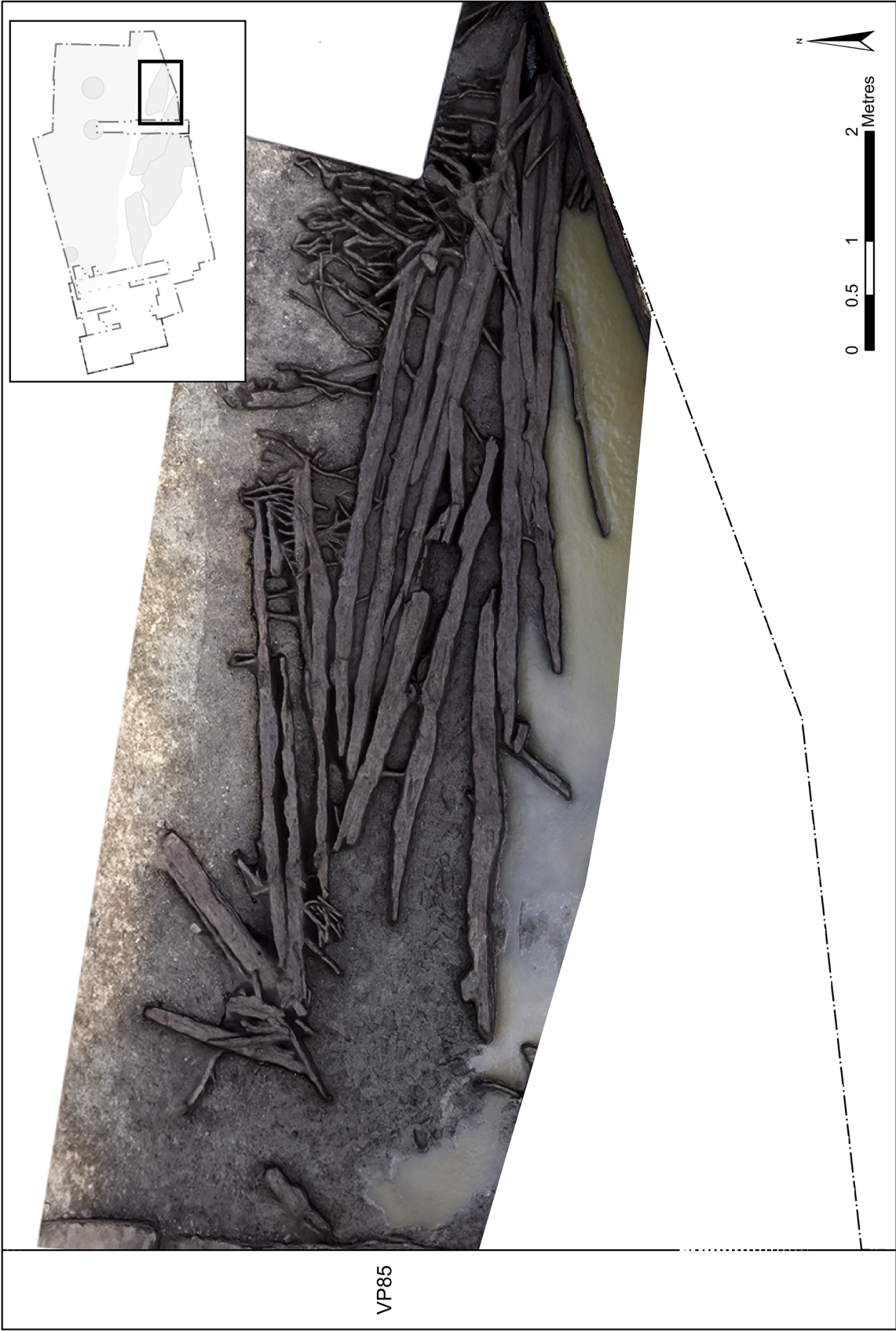


Figure 6.31: Orthophoto of the eastern platform (exported from Agisoft Photoscan Pro, courtesy of Dominic Powlesland) (Copyright Star Carr Project, CC BY-NC 4.0).

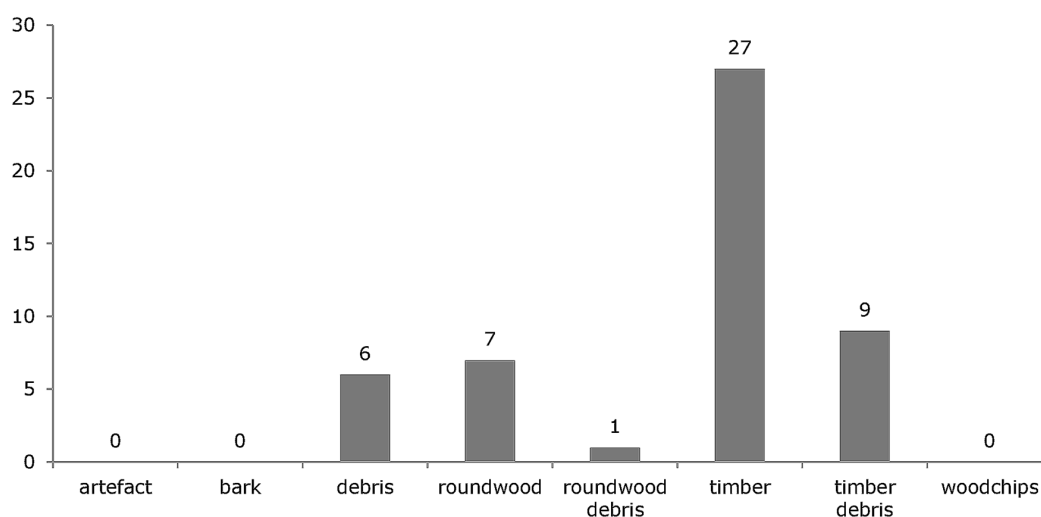


Figure 6.32: Wood categories for the eastern platform (Copyright Star Carr Project, CC BY-NC 4.0).

Find no.	Length (mm)	Horizontal diameter (mm)	Vertical diameter (mm)	Compression %
113252	3988	226	45	19.9
114252	4010	195	28	14.4
114854	3295	148	43	29.1
114856	3350	180	40	22.2
114860	4180	190	90	47.4
114861	3930	156	39	25.0
114874	3900	120	12	10.0
114879	4450	160	32	20.0
114881	3610	145	56	38.6
114883	4010	154	50	32.5
114885	4735	180	40	22.2
114888	4370	130	60	46.2
114890	4450	90	25	27.8
114897	3020	150	15	10.0
114898	1650	280	45	16.1
114899	4130	150	36	24.0
114900	1510	149	34	22.8

Table 6.21: Trees from the eastern platform.

none show any sign of woodworking. Due to the poor condition of much of the material it was only possible to identify the proximal/distal orientation of a few of the items, from which no particular trends are apparent. The trees vary in length from 1510–4735 mm and from 90–280 mm in horizontal diameter. The high degree of compression is evidenced by the vertical diameters, which vary between 10–47% of the horizontal values (Table 6.21).

Unsplit items

With the exception of the material classed as trees, there are a total of 11 unsplit items forming part of this platform: seven classed as roundwood and four classed as timber (Figure 6.31). Only one of these items has bark present. These items vary in length from 195–1070 mm and from 13–170 mm in the horizontal, long axis of the diameter. One item, <114875> has been trimmed to length at the proximal end from two directions.

Split items

A total of 22 split items form part of this structure: six classed as timber, nine pieces of timber debris, six pieces of debris and a single piece of roundwood debris (Figure 6.32). Tangentially converted material dominates the assemblage with 16 items (72%) aligned in this plane (Table 6.22), whilst three are radially split items (14%) and three are of unknown conversion (14%). The split material classed as timber varies in length from 565–2520 mm, in breadth from 55–200 mm, in thickness from 7–18 mm and is all tangentially aligned (Table 6.22). The timber debris and debris are considered here together. This material varies in length from 91–465 mm, in breadth from 30–170 mm, in thickness from 10–34 mm and is dominated by tangentially aligned items (n=10) with 3 radially aligned items and 3 of uncertain conversion (Table 6.22).

Discussion of the lake edge timber platforms

The three lake edge platforms are the most substantial wooden structures on the site. Each is constructed from large timbers (including trees and split material) that have been laid down directly onto the peat that was forming within the lake edge wetland. From their form and composition they are clearly deliberately built structures and not natural accumulations of material and represent significant investments in terms of resources and labour.

The central platform is the earliest, largest and most complex of these structures, consisting of three clearly defined layers of material. The timbers of each layer lay directly over each other with no sediment present between and had probably been deposited in a single event. The top layer is dominated by a series of large, unconverted trees, split and unsplit timbers, up to 3.8 m long, lying parallel to one another and aligned north-west/south-east (Figure 6.24). This forms the main axis of the structure, which runs for over 17 m (extending beyond the limits of the excavation). Where identifiable, the proximal ends of these timbers were generally lying to the south-east, away from the water's edge, and so cannot represent trees that have simply fallen into the lake edge wetland. Below these were a layer of parallel timbers, orientated north to south, which in turn lay on top of a series of parallel, tangential outer splits that followed the same

Conversion	Timber	Other	Total frequency	Total %
Rad	0	3	3	13.6
Rad ½	0	0	0	0.0
Rad 1/3	0	0	0	0.0
Rad ¼	0	0	0	0.0
Tan	5	9	14	63.6
Tan – surface split away	0	1	1	4.5
Tan outer	1	0	1	4.5
U/K	0	3	3	13.6
total	6	16	22	100.0

Table 6.22: Conversions from the eastern platform.

north-south alignment. These lower layers lie towards the north-west (shoreward) end of the platform and may have been laid down to provide additional support to this part of the structure or perhaps to elevate it further above the peat.

Although it is less coherent, the western platform is also a relatively complex structure, consisting of five semi-distinct layers of wood sat above a brushwood base. The main axis of this platform was made up of a layer of east-west aligned timbers (layer 2) running along its full extent. Again, this material was very large with most of the timbers between three and four metres in length. At its eastern end this material was overlain by an upper layer of timbers (layer 1), which ran at an angle to the platform's main axis, whilst three further layers of timber (layers 3–5) lay at the base of the platform, presumably to stabilise the structure and prevent it from sinking into the peat. As with the central platform there is no sediment between the layers of timber, as the platform has probably been constructed as a single event.

The eastern platform is the simplest of the structures, made up of a single layer of material, though as with the other platforms, this consisted of very large timbers (including whole trees), some over four metres long. Though an underlying layer of timber was present, this is separated from the main concentration of material by a layer of sediment and probably represents an earlier phase of activity.

Though there are some differences between them, the three timber platforms are very similar in terms of their construction, each possessing a principal axis made from large timbers (including whole trees). There is also a strong tendency for the timbers of each of the platforms to be aspen, including all the identified timbers from the eastern platform (n=4) and the western platform (n=20), and the majority of the identifiable timbers from the central platform (3 aspen, 2 willow). In addition, the platforms are notably different from the other large concentrations of wood at the site, with a far higher proportion of timbers than either the detrital wood scatter or Clark's area, and the highest prevalence of timbers classed as 'trees' (1.5% for the detrital wood scatter, 11% for the central platform, 21% for the western platform and 34% for the eastern platform). There is also an extremely low prevalence of wooden artefacts recorded from the platforms: just two timber debris stakes recorded from the western platform (See Chapter 30), and very low quantities of other archaeological material (see Chapters 7 and 8).

In terms of their function, the position of the platforms close to the edge of the lake suggests that they were constructed in order to enable movement into the wetland area, perhaps to access deeper water further from the shore. However, it is also possible that they were laid down to create a more solid, stable surface perhaps for hauling in boats or for undertaking particular tasks within the wetlands. Unfortunately the lack of associated material culture makes any further interpretation difficult and it should be noted that the platforms may well have performed multiple functions.

Other wooden remains

There are a total of 200 wood records that were recovered from parts of the site not assigned to any of the spatial analytical areas defined in the introduction to this chapter. These records have been sub-divided into four groupings: 1) The peat above the marl: 27 items, 2) wood peat (310): 65 items, 3) Clark's backfill: 2 items, 4) unassigned: 106 items.

The peat above the marl

A total of 27 items were recorded from the area above the marl dome (Chapter 20), the majority were recovered from the reed peat (312) and detrital mud (317), with a single item from within the basal organic sand (320). A range of material is represented, including timber, roundwood, forms of debris, and a single artefact: <107799>, an ad-hoc tool (Figure 6.33). Four items are charred, seven display morphological traits that may be indicative of coppicing, 14 items are split, and three have trimmed ends.

One of the timbers, <109922>, is a fallen tree that may be in situ. Lying approximately north (proximal)/south (distal), the proximal end is very heavily charred on the upper surface for the first 2000 mm terminating in a totally charred end. Numerous side branches are visible around what appears to be the crown, the first occurring approximately 400 mm from the charred proximal end. The surviving portion of the trunk measures 4.5 m × 310 mm × 70 mm. The charring may be a result of a burning event in the surrounding reed beds.

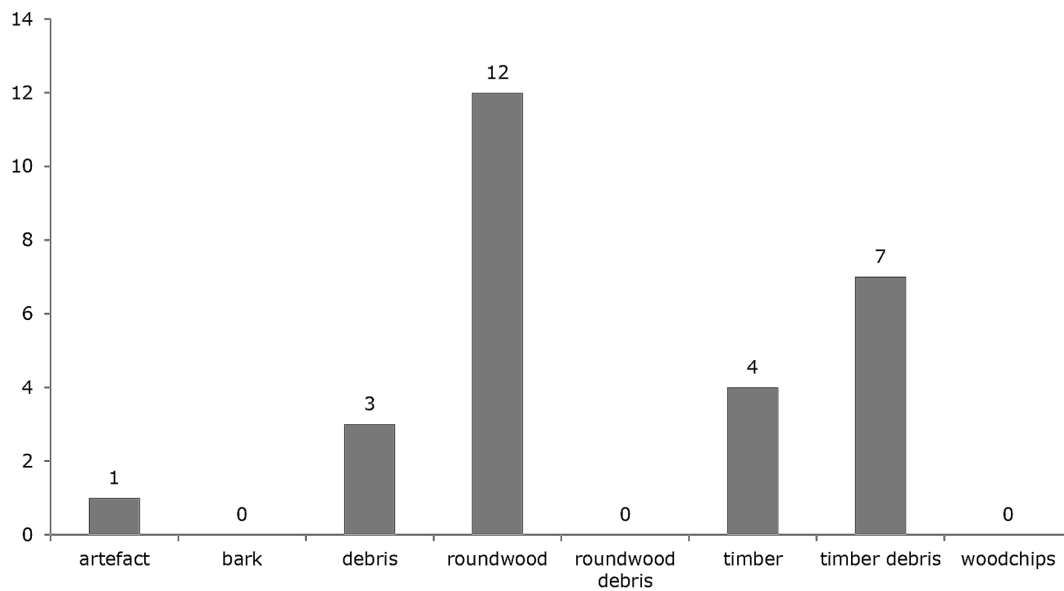


Figure 6.33: Wood categories for the area classified as peat above the marl (Copyright Star Carr Project, CC BY-NC 4.0).

Wood peat (310)

A total of 65 items were recorded from within wood peat (310) (Figure 6.34). Roundwood is the most common material, though other items are also present, notably timber, forms of debris, and a single artefact: an ad-hoc tool <107755> (Chapter 29). The majority of the material (89%) is in moderate or worse condition as might be expected given the relatively high position in the sequence of the material. The character of the assemblage is broadly similar to that seen in other areas: 17 items (26%) are charred, often heavily; 12 items (18%) show morphological traits that may be indicative of coppicing; 17 items (26%) are split. No evidence for tool facets was recorded.

Amongst this material is an interesting group of three pieces of tangentially split timber debris (<107759-61>) some 18 m south-west of the dryland deposits, in the south-west of the area of investigation, that appear to represent in situ primary woodworking debris derived from a single episode. One of the items is a tangential outer split and two are moderately charred on one face. The items are visually very similar and may perhaps represent debris from the working of the same parent timber. They vary in length from 120–255 mm, in breadth from 60–73 mm and from 8–14 mm in thickness.

None of the seven timbers recorded were worked and four are thought to be fallen trees, probably lying in situ. The first of these, <98866>, is a large, fallen tree aligned roughly north-south that lies above the timbers of the central platform. The proximal (north) end is 350 mm in diameter and lenses out at the edge of the waterlogged deposits against the slope of the lake edge. The distal end of the tree passes out of the excavation area some 10.3 m to the south (at which point its diameter is 80 × 110 mm). The first side branch is located 5.2 m from the proximal end and a major crux some 6.5 m. There are numerous side branches and the trunk is somewhat curved in the crown of the tree (Figure 6.35).

Figure 6.35 (page 117): Fallen tree <98866> lying above timbers of the central platform (Copyright Star Carr Project, CC BY-NC 4.0).

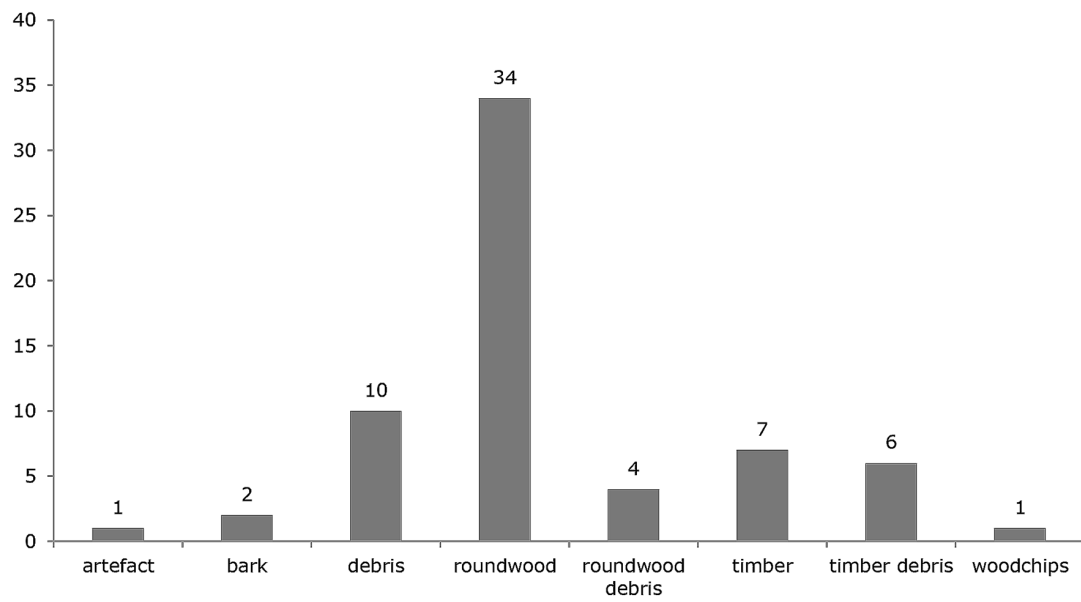


Figure 6.34: Wood categories classified as wood peat (310) (Copyright Star Carr Project, CC BY-NC 4.0).



The second, <113275>, is a section of tree trunk, lying approximately north-south, to the south of the brushwood some 7.5 m from the dryland deposits. The north end is truncated by previous excavations and the south end is degraded. Bark was present on the underside and moderate small side branches were noted. The trunk measures $1530 \times 150 \times 35$ mm.

The remaining trees, <113763> and <113764>, are represented by lengths of highly compressed trunks, in very poor condition, measuring $1530 \times 260 \times 35$ mm and $1530 \times 260 \times 35$ mm respectively. In both cases bark is present and both ends are degraded. The trees were aligned north-south, above the timbers of the eastern platform, extending out of the trench to the south.

Clark's backfill

Occasional pieces of smashed-up waterlogged wood were present within the backfill of several of Clark's trenches. For the most part, this material was too heavily mechanically damaged and smashed to be analysed. However, two relatively intact pieces were recorded from the backfill of cutting V. Both were heavily charred and appear to be woodworking debris. Of these, <96111> is tangentially aligned and measured $197 \times 60 \times 10$ mm whilst <96112> is an extremely unusual transverse aligned item measuring $140 \times 82 \times 12$ mm.

Unassigned material

A total of 106 items are not assigned to any other spatial analytical group. These were recovered from the reed peat (312) and detrital mud (317) and are spread across the site. The material is similar in terms of make-up, appearance and woodworking evidence to that seen in other analytical groups (Figure 6.36). Three artefacts are present: a digging stick/haft or handle <113765>, small radial dowel <113768> and a sub-rectangular radial dowel <113778> (Chapter 29). A total of 18 items are charred, 34 are split and two have chop-and-tear trimmed ends. Much of the roundwood recorded in this area represents sub-samples of larger deposits of brushwood. However, seven pieces did display possible morphological evidence of coppicing.

Two fallen trees were recorded. The first, <109112>, is degraded at both ends and measures $1560 \times 125 \times 65$ mm. Located to the south of the detrital wood scatter, part of the crown of the tree was present and partially recorded as roundwood <109113-117>. The second, <113251>, was lying proximal end north/distal end south, above the timbers of the western platform, where it extended out of the area of investigation. The first side branch occurred 2500 mm from the degraded proximal end and the excavated portion measured $5530 \times 255 \times 32$ mm. The tree was in poor condition.

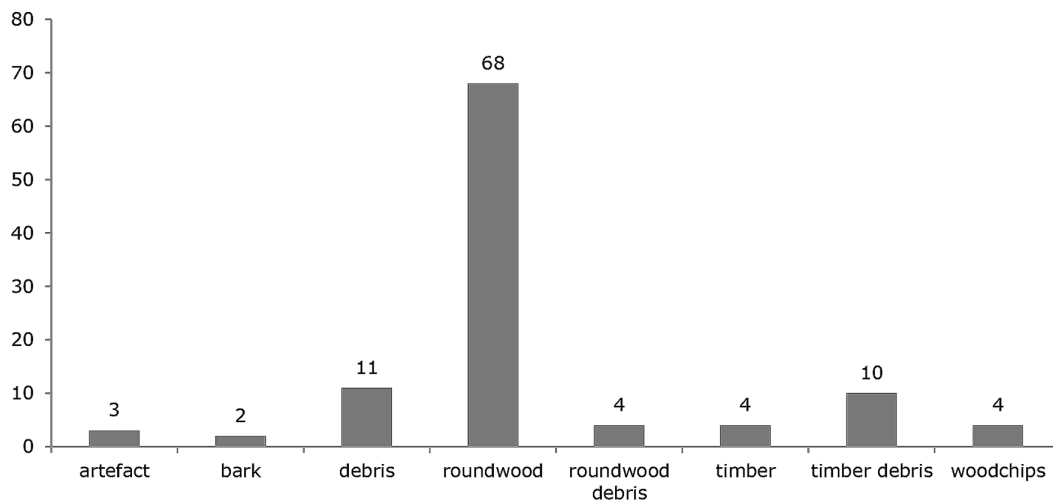


Figure 6.36: Wood categories classified as unassigned material (Copyright Star Carr Project, CC BY-NC 4.0).

Conclusions

Each of the previous programmes of fieldwork at Star Carr have recorded evidence of wooden structures that were used to facilitate forms of activity within the lake edge wetlands. For Clark this was the deposit of unworked birch brushwood, which he argued had been laid down deliberately to form a stable occupation surface at the edge of the lake (Clark 1954:9). The later excavation of VP85A recorded a very different structure, this time made from deliberately split timbers that had been laid down to form a platform or trackway (Mellars et al. 1998:62). Whilst the current project has changed the way we understand these earlier discoveries, its major contribution has been to show how extensive and varied the use of wooden structures was within the wetland areas.

The most significant of the structures, in terms of their physical size, and the labour and resources they entailed, are the three large timber platforms (the central, eastern and western platforms). These structures have much in common in terms of their form, setting and the raw material used in their construction. They all lie close to the edge of the lake and have been laid directly onto the peat. Their primary axis is defined by a mixture of entire 'cleaned up' tree trunks and extremely large split timbers, some up to 3.5 m in length, and from the absence of sediment between overlying timbers each appears to have been built in a single event.

There is no doubt that these are nothing other than deliberately built structures. To begin with, the component timbers have clearly been placed by the inhabitants of the site to create a regular linear surface, given the overall arrangement of the wood and the fact that at least some timbers lie parallel and abut each other on their longest sides. Added to this is the obvious layering visible in the central platform, which is made up of three tiers of parallel timbers, each of which is on a different alignment. Second, in contrast to the trees that had fallen into the lake, the trees that formed part of the platforms were straight grained and lacked side branches, features that suggest they had grown in areas of denser woodland cover. As such, they have been brought to this location and do not represent natural falls of trees growing on the shore. Third, apart from the trees, much of the material making up the platforms has been deliberately split, with evidence for the groove-and-split technique of working, whilst tooling marks were also present on the better-preserved timbers from the 1985 excavations (Mellars et al. 1998). Finally, whilst there is evidence for beaver gnawing on some pieces of wood, the contribution of this large rodent to the accumulation of wood recorded at Star Carr is minimal, representing only c. 0.5% of the total recorded assemblage and even less in terms of the material forming the platform. As such there is no possibility that the platforms represent the actions of beavers (for a full discussion of beaver activity see Chapter 28).

Whilst the intentionality of these structures is clear, the motivation behind their construction is harder to discern. Given their position and orientation it seems highly likely that all of the platforms were built to facilitate access into the lake edge wetlands, though whether this was for the purpose of hunting, the mooring of boats, accessing areas of open water, or other forms of activity is unclear. Furthermore, whilst the similarity in the appearance of the platforms makes it tempting to suggest they all shared the same function, the broad temporal frame across which they occur warns against such a simplification (see Chapter 9).

The detrital wood scatter, whilst lacking the same level of coherence and structure, was probably also a deliberate construction. Again, this is reflected in its linear form as well as the spatial relationship between the wood and the assemblage of animal bone that was deposited at the same time. However, in contrast to the large platforms, the detrital wood scatter has built up through successive episodes of deposition rather than a single phase of construction, and appears to have been used (at least in part) for the purpose of depositing parts of animal carcasses into a discrete part of the wetlands (Chapter 7).

In contrast, there is no evidence that the wood encountered by Clark acted either as a platform or occupation surface. The brushwood recorded during the current project represents a gradual, natural accumulation of material, probably of small branches falling into the lake edge from trees growing at the shore. This material clearly extended into Clark's cutting II and must have been part of the assemblage of wood that he recorded. Equally, the wood from the baulk between cuttings I and II, which also extends into Clark's excavations, is too diffuse to have formed an occupation surface or to have been deposited as made ground. Instead this material has probably been deposited into the wetlands, perhaps as part of the same sets of practices through which a large assemblage of animal bone, worked antler and flint was deposited. It should also be noted that the clay mentioned by Clark was also found in the recent excavations but on closer inspection it did not appear to form clay 'wads'; rather it appeared to be clay that had resulted from surface runoff from the dryland.

Whilst interpretations of the structural and functional aspects of these assemblages are clearly important we should also consider how the nature of the material provides other insights into the character and scale of woodworking at Star Carr. To begin with, the presence of large quantities of roundwood rods and poles with morphological traits associated with coppicing hints at either some deliberate management of woodland resources or perhaps simply a high degree of selection for long straight poles (see Chapter 28). Furthermore, the extensive wooden remains encountered at the site provide evidence for the use of significant quantities of split, trimmed and hewn wood. All the major wood categories are present from large timbers (including the utilisation of entire felled trees and naturally fallen tree trunks) through timber debris (off-cuts), smaller woodworking debris, woodchips, roundwood and roundwood debris. What is more, woodworking is a reductive technology and waste material, by-products and off-cuts occur in all of the assemblages. Whilst some of this may relate to the construction of the platforms, much of the material has been generated through the woodworking tasks relating to other structures, built either in unexcavated parts of the wetland or on areas of the dryland. These may have included the manufacture of components of the post-built structures that were recorded just above the shore (see Chapter 5), such as parts of their frames or internal features. Equally, they may have been generated through the building of other forms of structures which have left no identifiable trace, such as raised storage platforms. We should also consider the other forms of material culture that people may have been making from wood and that may have generated comparable assemblages of waste such as boats, traps, stools or ladders. Such artefacts and structures are seldom considered in our narratives of the Mesolithic but the data from Star Carr shows that these or similar objects would have been just as much a part of people's lives as things made from stone, bone and antler.

Given the scale of woodworking at Star Carr it is all the more surprising that there is so little comparable evidence from other Mesolithic sites, either in Britain or other parts of Europe. Two structures have been identified at the Williamson's Moss site in Cumbria, the first consisting of a layer of birch brushwood overlying a timber lattice, the second made up of two timbers and an extensive area of bark flooring (Bonsall et al. 1989), though neither approaches the scale of the Star Carr platforms. Wooden deposits recorded during nineteenth-century investigations at Round Hill, Skipsea have also been reinterpreted as a possible Mesolithic lake edge platform based on more recent radiocarbon dating and small-scale excavations (Fletcher and Van de Noort 2007; Van de Noort et al. 1995). However, the nature of this structure is difficult to discern, though the original accounts note an absence of piles and a general lack of discernible order amongst the wood (Fletcher and Van de Noort 2007, 318), features which are reminiscent of the detrital wood scatter. More recently, three vertical timber posts have been recorded from the Thames Foreshore at Vauxhall and radiocarbon dated to the very Late Mesolithic (Milne et al. 2010). Though there is no evidence for the nature of this structure, the size of the posts suggests a relatively substantial structure, such as a small raised platform or jetty.

Evidence for comparable wooden platforms or trackways from other parts of Northern Europe is also sparse. In Ireland wooden platforms have been recorded at Clynacartan bog on Valentia Island (Co. Kerry) (Woodman 2009) and Clowanstown (Co. Meath) (Mossop 2009), and layers of brushwood formed part of the construction of the lake edge platform at Lough Kinnale (Co. Longford) (Fredengren 2009). However, none consist of the arrangements of large timbers and trees noted at Star Carr and are generally interpreted as fishing platforms or artificial islands. Similarly brushwood and timbers formed the base of the bark platforms at Duvensee in Germany (see Chapters 12 and 30) and timbers are known from Bølling Sø Vest IV, in Denmark (Andersen and Møbjerg in press).

Indeed, it is not until the Neolithic, that larger timber structures become more apparent. A very early example was recently recorded during excavations at Belmarsh, Southeast London (Hart et al. 2015). This consisted of split timbers and an unsplit log, and is similar in size and shape to the Star Carr timber platforms. A fragment of another, potentially comparable, structure believed to form part of a trackway or platform was also excavated at Silvertown, London, and was formed of three narrow, overlapping planks (Meddens 1996; Stafford et al. 2012). Similarly, an Early Neolithic platform excavated in Stirlingshire, Scotland, consisted of large split and unsplit timbers (including tangential outer splits) supported on a timber and brushwood frame, creating a structure that was some 9 × 4.5 m (Ellis et al. 2002). Other forms of wooden structure include the Late Neolithic Corduroy trackway excavated at Hatfield Moor in the Humberhead Levels (Chapman et al. 2013), and

the brushwood trackways at Honeygore and Honeycat alongside a hurdle trackway at Honeycat (Coles et al. 1985) and the relatively complex Sweet Track in the Somerset levels (Coles and Orme 1984).

In the past, the absence of such structures from the Mesolithic (and particularly the Early Mesolithic) could be explained in terms of the perceived nature of society at this time, and in particular the high degree of mobility and small sizes of social groups. The evidence from Star Carr shows how wrong such assumptions have been. The timber platforms (and the wood assemblages more broadly) suggest large groups of people working together and investing resources and labour at this specific location. That we have not found comparable evidence at other sites may tell us more about our expectations than it does about life in the British Mesolithic.

